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of Engineers®**

Sacramento District
Engineering Division

Lower San Joaquin Feasibility Study – Environmental Impact Report/ Supplemental Environmental Impacts Statement

San Joaquin County, California

Appendix B: Engineering Appendix

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ACRONYMS

| | |
|---------|---|
| ACE | Annual Chance Excedance |
| ACRA | Abbreviated Cost Risk Analysis |
| ASTM | American Society for Testing and Materials |
| CFS | cubic feet per second (flow) |
| CM | Construction Management |
| CS | Central Stockton (geographical area) |
| CVHS | Central Valley Hydrology Study |
| CWWBS | Civil Works Work Breakdown Structure |
| DRMS | Delta Risk Management Study |
| DSM | Deep Soil Mixing |
| DWR | California Division of Water Resources |
| EC | Engineer Circular |
| ED | Engineering Division (USACE) |
| EO | Executive Order |
| ESA | Environmental Site Assessment ID |
| ETL | Engineer Technical Letter (USACE) |
| ER | Engineer Regulation |
| FEMA | Federal Emergency Management Agency |
| FLO-2D | Flood routing model simulating channel flow, unconfined overland, and street flow over complex topography |
| GIS | Geographic Information Systems |
| HEC-HMS | Hydraulic Engineering Center – Hydraulic Modeling System |
| HEC-RAS | Hydraulic Engineering Center – River Analysis System |
| HTRW | Hazardous, Toxic, Radioactive Waste |
| HQ | Head Quarters (USACE) |
| IDC | Interest During Construction |
| LiDAR | Light Detection and Ranging |
| LMA | Local Management Agency |
| LS, LSJ | Lower San Joaquin |
| LSJFS | Lower San Joaquin Feasibility Study |
| MCACES | Micro-Computer Aided Cost Estimating System |
| NAD | North American Datum |
| NAVD | North American Vertical Datum |
| NS | North Stockton (geographical area) |
| NSSDA | National Standards for Spatial Data Accuracy |
| OMRR&R | Operation and Maintenance, Repair, Replacement and Rehabilitation |
| PACR | Post Authorization Change Report |
| PCET | Parametric Cost Estimating Tool |
| PDT | Project Development Team |
| PED | Preconstruction, Engineering, and Design |
| RD | Reclamation District |
| RE | Real Estate |
| RMSE(r) | Root Mean Square Error in r |

ACRONYMS (Cont'd)

| | |
|--------|---|
| ROW | Right of Way |
| SEWD | Stockton East Water District |
| SJAFCA | San Joaquin Area Flood Control Agency |
| SJR | San Joaquin River |
| SLR | Sea Level Rise |
| SoP | Standard of Practice |
| SPK | Sacramento District (USACE) |
| TPCS | Total Project Cost Summary |
| TSP | Tentatively Selected Plan |
| ULDC | Urban Levee Design Criteria |
| UNET | one dimensional unsteady flow model for open channel flow |
| USACE | United States Army Corps of Engineers |
| USGS | United States Geological Survey |
| VE | Value Engineering (study) |
| WTP | Water Treatment Plant |

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CHAPTER 1 – INTRODUCTION

1.1 Project Description and Background

Since initiating the Lower San Joaquin Feasibility Study (LSJFS), the Project Delivery Team (PDT) representatives have developed a comprehensive flood control plan for San Joaquin County. The PDT initially developed a framework based on known constraints from the varying organizations. The Federal constraints centered on adhering to Corps of Engineers (Corps) study policies for a project to be authorized for federal construction funding. The goal of the California Division of Water Resources (DWR) was the completion of the study by January 2015 to meet the goal of registering the project for state bond appropriations during the same month. San Joaquin Area Flood Control Agency's (SJAFC) goal was the continuing effort to provide safety to their community during rising floods.

While the LSJFS began as a traditional feasibility study, it was later reprogrammed under the new Corps planning modernization 3x3x3 (3³) and as such and was placed on a shorter schedule with matching appropriations. The transition to 3³ occurred during the winter/spring of 2012. The original study began approximately a year earlier in the fall of 2010.

1.2 Purpose and Scope

This summary provides a synopsis of the engineering analysis conducted during the feasibility work phase of the study by the engineering portion of the PDT. The objective is to summarize the designs and cost estimates completed through the final array of alternatives and TSP.

1.3 Sponsors

The LSJFS was initiated as a cost share agreement between SJAFC and the Corps in February of 2009. The Central Valley Flood Protection Board represented by the California DWR signed on as a secondary non-federal sponsor in July of 2010. The local sponsor's design team was represented by Peterson Brustad, Inc.

CHAPTER 2 – GENERAL DESIGN CONSIDERATIONS

2.1 General

The goal of the engineering appendix is to provide a summary of the methods developed to reduce flood damages. The recommended flood risk reduction area is provided in Figure 1.

2.2 Datum

The North American Datum of 1983 (NAD 83) State Plane California Coordinate System Zone III (U.S. Survey Feet) was used for horizontal control. The North American Vertical Datum of 1988 (NAVD 88) was used as the vertical datum.

2.3 Alignment and Segments

2.3.1 Incremental Study Segments thru Final Array

Following the preliminary screening effort, levees which qualified for the initial screening were estimated for fix-in-place construction and associated costs as small segments. Fix-in-place costs were estimated for small segments to provide flexibility during the refinement stages of alternatives analysis. These smaller segments allow the refinements to add or delete segments incrementally. The study area contains 92 miles of levee which were classified into approximately 130 segments that were on average 3,700 feet in length. The result of this segmentation is presented in Figures 2 through 5.

Segment stationing went unchanged during the various phases of the study. The packaging of the number of segments varied as segments were added or deleted depending on the formulation of the array.

2.4 Alternative Reaches

2.4.1 Geographical Study Segments

Study segments were developed geographically based on the adjacent water feature or tract name. Segments were created for Mosher Creek, Fourteen Mile Slough, the Calaveras River, the delta front levees between Mosher Creek and the Calaveras River, Mormon Channel, Stockton Diverting Canal, Smith Canal, San Joaquin River, French Camp Slough, Duck Creek, and Paradise Cut Bypass. A geographical feature would often times dictate where a segment would begin or end. These geographical features which were used as natural starting and stopping locations were highways, levee embankments, water features, embankments, etc. See 2.3.1 General for additional information, and map Figures 2 through 5 for individual segments.

2.4.2 Initial Alternatives

A list of measures were created by the PDT during the planning charrette of January 2013 to use in the formulation of alternative plans. A measure is a feature or an activity that can be

implemented at a specific geographic site to address one or more planning objectives. For example, a measure could be a fix for an earthen levee such as a cut-off wall or seepage berm. The measures were categorized into structural and non-structural solutions. Seventy-three measures were identified as potential options for the study. The six criteria which were used to rank the 73 measures were meets objective, cost, environmental impacts, acceptability (by the community), completeness, and 21st century flood plain management.

The decision to consider a measure was based on its ranking among the 6 criteria used to rank the measures including a geotechnical engineering recommendation, and a decision to implement based on need. The 73 measures were reduced to 22 measures after ranking the measures based on the criteria. Measures were identified for 3 distinct geographical areas. The areas were divided into North Stockton, Central Stockton, and Reclamation District (RD) 17 (South Stockton). Six alternatives were recommended for North Stockton, five alternatives were recommended for Central Stockton, and five alternatives were recommended for RD17. The alternatives were created through a combination of flood containment using hydraulic breach scenarios plus a common sense approach to reach lengths which might terminate at highways or high ground. The Mormon Channel bypass and Paradise Cut options were recommended as incremental alternatives for further evaluation during the Value Engineering Study. Tables 1, 2, and 3 provide further details of the initial arrays. Figure 6 through 8 are provided as representative alternatives for North Stockton, Central Stockton, and RD-17 areas respectively.

2.4.3 Focused Array

Hydraulic design provided model runs of breach simulations which were performed for the initial alternatives. Some of the alternatives were modified based on their performance after a levee breach. An example of flooding containment is shown for the North Stockton area in Figure 9. The results from Figure 9 were used as a tool by our hydraulic designer to further refine alternatives.

The following summarizes a focused array used to begin identifying the TSP.

Alternative 1: The No-Action Alternative. Under this plan no effort is made to further reduce the risk of flooding. The areas identified in the initial alternatives are a combination of project and non-project levees which either have geometric deficiencies, height deficiencies, through and under seepage issues, landside stability, or erosion issues.

Alternative 2A – Fix-in-Place, No Bypass: Alternative 2A is a combination of North Stockton Alternative F, Central Stockton Alternative D, and RD17 Alternative E.

Table A. Description of Implementing Alternative 2A (Figure 11)

| | |
|--|--|
| Initial Alternative Features | Specific Structural Features: Smith Canal, Mosher Slough and 14 Mile Slough Closure Structures. |
| NS-F, CS-D, RD-17-E | |
| Description: Delta Front North and South, and Calaveras River addresses the right bank of the Calaveras River and the delta front as flooding sources. This alternative includes closure structures across Mosher Slough and Fourteen mile Slough. Additionally the Calaveras River, Diverting Canal, and San Joaquin River (SJR) address the San Joaquin River, Stockton Diverting Canal, Calaveras River, French Camp Slough and Duck Creek as flooding sources and includes the Smith Canal closure structure. Finally the north portion of the SJR of RD-17 with a tieback levee and levee extension address the San Joaquin River and French Camp Slough as flooding sources. | |

Alternative 2A is shown in Figure 11 for reference. Further evolution of Alternative 2A provided for levee improvements connecting the existing Delta Front levees to the railroad tracks along the north bank of Mosher Slough. Figure 11 does not show the Mosher slough levee as part of the alternative which was included later.

Alternative 2B – Fix-in-Place, No Bypass: Alternative 2B is a combination of North Stockton Alternative B, Central Stockton Alternatives B and C, and RD-17 Alternative E.

Table B. Description of Implementing Alternative 2B (Figure 12)

| | |
|---|--|
| Initial Alternative Features | Specific Structural Features: Smith Canal, Mosher Slough and 14 Mile Slough Closure Structures. |
| NS-B, CS-B, CS-C, RD-17-E | |
| Description: Delta Front north and south, Calaveras River and SJR address the delta and tidal portion of the Calaveras River as flooding sources. The alternative includes closure structures across Mosher Slough, Smith Canal, and 14 Mile Slough. For the San Joaquin River Front in Central Stockton the SJR, French Camp Slough, and Duck Creek are addressed as sources of flooding. The SJR North with Tieback and Extension in RD-17 address the SJR and French Camp Slough as flooding sources. This alternative also extends the tie-back levee to address flanking issues. | |

Alternative 2B is shown in Figure 12 for reference. Further evolution of Alternative 2B provided for levee improvements connecting the existing Delta Front levees to the railroad tracks along the north bank of Mosher Slough. Figure 12 does not show the Mosher slough levee as part of the alternative which was included later.

Alternative 3 – Fix-in-Place with Bypass: Alternative 3 is Alternative 2A (North Stockton Alternative B, Central Stockton Alternatives B and C, and RD-17 Alternative E) with the addition of the Mormon Channel Bypass.

Table C. Description of Implementing Alternative 3 (Figure 13)

| | |
|--|--|
| Initial Alternative Features | Specific Structural Features: Smith Canal, Mosher Slough and 14 Mile Slough Closure Structures. |
| NS-B, CS-B, CS-C, RD-17-E, Mormon Slough Bypass | |
| Description: The delta and tidal portion of the Calaveras River, and SJR are addressed as the flooding sources. The alternative includes a closure structure across Mosher Slough and Smith Canal. Additionally the San Joaquin River, French Camp Slough, and Duck Creek are addressed as sources of flooding. For RD-17 the north portion of the SJR with levee tieback and levee extension is included. This alternative addresses the San Joaquin River and French Camp Slough as flooding sources. The alternative includes the Mormon Slough bypass which diverts floods off the Stockton Diverting Canal and the Calaveras River. | |

Alternative 3 is shown in Figure 13 for reference. Further evolution of Alternative 3 provided for levee improvements connecting the existing Delta Front levees to the railroad tracks along the north bank of Mosher Slough. Figure 13 does not show the Mosher slough levee as part of the alternative which was included later. Alternative 3 evolved into Alternatives 7, 8, 9, and 10.

Further evolution of alternatives included levee raises which became Alternative 4. For more detailed information on the focused array, reference the draft integrated feasibility report (draft report).

2.4.4 Final Array

The final array contained combinations of the best hydraulically performing and economically justified alternatives from the focused array. A majority of the alternatives reduced residual damages to a point where additional measures couldn't be justified. The economic analysis conducted during evaluation of the focused array of alternatives evaluated if increases in levee height would be economically justified. It was determined that increases in levee height to meet the DWR Urban Levee Design criteria for 2070 sea level conditions had higher net benefits. Therefore, all alternatives presented in the final array include levee raises that met ULDC requirements in 2070 as a design assumption.

Final array alternatives are provided in Table D. A new naming convention was used for the final array alternatives. As seen below, focused array alternative 2B plus levee raises for sea level rise is labeled LS-7b, focused array 2A plus sea level raise is labeled LS-8b. Refer to Table D for further nomenclature.

Table D. Final Array of Alternatives Information for the LSJ Study

| Focused Name | Final Name | Information | Geographical Areas |
|---------------------------------|-------------------|--|--|
| 2B + SLR ⁴ (LS-7) | LS-7b | Cut-off Wall (>75% of the fix), ~ 42 repair miles, construction footprint: ~ 364 acres | North, Central, RD-17 (Delta Front, Lower Calaveras, and San Joaquin River Levee Improvements) |
| 2A + SLR (LS-8) | LS-8b | Cut-off Wall (>80% of the fix), ~ 53 repair miles, construction footprint: ~ 418 acres | North, Central, RD-17 (Delta Front, Lower Calaveras, Stockton Diverting Canal, and San Joaquin River Levee Improvements) |
| 3 + SLR (LS-9) | LS-9b | Cut-off Wall (~80% of the fix), ~ 43 repair miles, construction footprint: ~ 401 acres | North, Central, RD-17 (Delta Front, Lower Calaveras, San Joaquin River Levee Improvements and Mormon Channel Bypass) |
| LS-7 w/o RD-17 | LS-7a | Cut-off Wall (>85% of the fix), ~ 23 repair miles, construction footprint: ~152 acres | North and Central Stockton (Delta Front, Lower Calaveras, San Joaquin minus RD-17) |
| LS-8 w/o RD-17 | LS-8a | Cut-off Wall (>90% of the fix), ~ 33 repair miles, construction footprint: ~ 214 acres | North and Central Stockton (Delta Front, Lower Calaveras, Stockton Diverting Canal, San Joaquin minus RD-17) |
| LS-9 w/o RD-17 (LS-10) | LS-9a | Cut-off Wall (>92% of the fix), ~ 33 repair miles, construction footprint: ~ 219 acres | North and Central Stockton (Delta Front, Lower Calaveras, San Joaquin minus RD-17, Mormon Channel Bypass) |

³ — assuming District Corps policy of 20' landside easement

⁴ — SLR is sea level rise

Just prior to a TSP decision on which alternative to formulate for, USACE is recommending that only North and Central Stockton geographically defined areas be considered for TSP inclusion. The geographical area of RD-17 conflicts with Corp policy EO 11988 which is being coordinated with the sponsor.

2.5 Topographic Data

2.5.1 General

The primary source of topographic or terrain data for the construction of the HEC-RAS models was LiDAR data compiled by DWR under the Central Valley Floodplain Evaluation and Delineation Study (CVFED) and Delta Risk Management Study (DRMS). The minimum expected horizontal accuracy was tested to meet or exceed a 3.5-foot horizontal accuracy at 95 percent confidence level using $RMSE(r) \times 1.7308$ as defined by the National Standards for Spatial Data Accuracy (NSSDA). Final ground surface LiDAR point elevation data in areas other than open terrain meet or exceed NSSDA standards of 0.6 feet RMSE vertical (Accuracy $z = 1.2$ feet at the 95% confidence level). Accuracy was tested to meet a 0.6-foot fundamental vertical accuracy at 95 percent confidence level using $RMSE(z) \times 1.9600$ as defined by the NSSDA. The horizontal datum is NAD83 (2007) and the vertical datum the North American Vertical Datum of 1988 (NAVD88). CVFED LiDAR data was acquired in a period of several weeks between March 17, 2008 and April 4, 2008.

2.6 Hydrology

2.6.1 General

Hydrology for the San Joaquin River was based on analysis conducted by the California Department of Water Resources (DWR) and USACE for the 2002 Sacramento-San Joaquin Comprehensive Study. Hydrology for the Calaveras River and Mormon Slough was based on analysis conducted for the feasibility study between 2010 and 2014 by the Local Sponsors and USACE and followed procedures compatible with the California Department of Water Resources Central Valley Hydrology Study (CVHS). The following provides a summary of the hydrologic flow frequency analysis utilized as inputs to hydraulic analysis. The hydrology appendix provides additional details.

a. San Joaquin River. The upstream boundary for the San Joaquin River hydraulic model is the USGS stream gage San Joaquin River near Vernalis. The drainage area at the stream gage is 13,536 square miles. Records at the USGS stream gage only account for flow in the channel and do not account for overbank flow. During large floods, flow on the waterside of the right bank levee outflanks the gage before discharging into the main channel at the RD17 tieback levee. Hydrologic frequency analysis presented herein accounts for all flow passing the gage, including channel and right overbank flow.

The Sacramento-San Joaquin Comprehensive study included the entire Sacramento and San Joaquin Valleys. Thirty-day regulated flow hydrographs developed for 50% (1/2) Annual Chance Exceedance (ACE), 10% (1/10) ACE, 4% (1/25) ACE, 2% (1/50) ACE, 1% (1/100) ACE, 0.5% (1/200) ACE, and 0.2% (1/500) was used in the hydraulic analysis.

The flood frequency analysis involved evaluations of long term historical records at the stream gages. The adopted statistics and period of record for the unregulated conditions near Vernalis

are provided in Table E. A tabulation of the flood frequency estimates for flood durations between 1-day and 30-days is provided in Table F.

Table E. Rain Flood Frequency Statistics, San Joaquin River near Vernalis
Unregulated Conditions

| Flood Duration | Adopted Log Mean | Adopted Log Standard Deviation | Adopted Log Skew | Record (Years) | |
|----------------|------------------|--------------------------------|------------------|-----------------|------------|
| | | | | Years Evaluated | Years Used |
| 1-Day | 4.375 | 0.450 | -0.1 | 1917 - 1998 | 82 |
| 3-Day | 4.333 | 0.445 | -0.1 | 1917 - 1998 | 82 |
| 7-Day | 4.251 | 0.433 | -0.2 | 1917 - 1998 | 82 |
| 15-Day | 4.148 | 0.412 | -0.2 | 1917 - 1998 | 82 |
| 30-Day | 4.042 | 0.392 | -0.2 | 1917 - 1998 | 82 |

Table F
Flood Frequency Flow Estimates, San Joaquin River near Vernalis

Unregulated Conditions

| Flood Duration | Duration Average Discharge by ACE (CFS) | | | | | | |
|----------------|---|---------|--------|--------|--------|----------|----------|
| | 50% ACE | 10% ACE | 4% ACE | 2% ACE | 1% ACE | 0.5% ACE | 0.2% ACE |
| 1-Day | 24100 | 88400 | 140300 | 188300 | 244700 | 310400 | 412900 |
| 3-Day | 21900 | 79100 | 124900 | 167000 | 216500 | 273900 | 363100 |
| 7-Day | 18400 | 62500 | 95200 | 124000 | 156500 | 193000 | 247300 |
| 15-Day | 14500 | 46400 | 69200 | 89000 | 111100 | 135600 | 171700 |
| 30-Day | 11400 | 34300 | 50200 | 63800 | 78700 | 95200 | 119200 |

A regulated set of hydrographs was obtained from “hand off” points in the lower basin reservoir simulation model. These hydrographs were then used as input to a UNET unsteady flow hydraulic model of the San Joaquin River. A review of the mainstem storm centerings found that peak stages along the San Joaquin River within the study area are generated by the San Joaquin River at Vernalis storm centering. The model was run for three different upstream levee failure scenarios.

(1) Infinite levee with no overtopping (Infinite). This is considered the extreme high estimate because no floodplain storage is allowed. All flow is confined to the leveed channel. This describes the extreme upper limit of potential peak flow at Vernalis relative to the levee assumption.

(2) Overtopping without Failure (No Fail). This model assumed all levees would overtop but would not fail. This may not be the most likely condition because some levees would likely fail prior to overtopping (probability of poor performance indicated by the fragility curve).

(3) With levee failure condition (With Fail). This model assumed all levees would fail at the 50% fragility point. This may not be the most likely condition because not all levees would fail at the 50% fragility point during the same flood.

A comparison of peak flows for the different levee assumptions is described in Table G. The comp study models were only run for floods larger than 10% ACE.

Table G
Sensitivity of Upstream Levee Failures, San Joaquin River near Vernalis
Regulated Conditions

| Levee Scenario | Peak Discharge by ACE (CFS) | | | | | | |
|---|-----------------------------|------------|-----------|-----------|-----------|-------------|-------------|
| | 50% ACE | 10% ACE | 4% ACE | 2% ACE | 1% ACE | 0.5% ACE | 0.2% ACE |
| Infinite Levee | NA | 36900 | 47000 | 58400 | 90800 | 145500 | 233700 |
| No Failure | NA | 35100 | 42300 | 47700 | 78200 | 144500 | 224100 |
| With Failure | NA | 32900 | 43000 | 50300 | 77300 | 113300 | 166600 |
| Source: 2002 Sacramento-San Joaquin Comprehensive Study UNET model results. | | | | | | | |

The peak flow of infinite height assumption was found to always be greater for a given ACE. The greatest difference between infinite height and no fail scenarios occurred at the 2% (1/50) ACE to 1% (1/100) ACE event which is probably around the flood magnitude that most system levees are overtopped. The No-Fail and With-Fail conditions are similar for floods smaller than 1% (1/100) ACE. The No-fail is larger than the with-fail condition for floods larger than 1% (1/100) ACE. The most likely condition is probably between the no-fail and with-fail conditions.

The overtopping with no failure scenario was adopted as the most likely hydraulic condition for this study to support the risk analysis. This probability of overtopping levee failure is accounted for the FDA model using a fragility curve that assumes 100% failure probability at the levee crest.

This assumption helps make a breach probability more statistically independent rather than dependent on each other and is consistent with historical observations that the probability of a breach does not appear to be highly dependent on other breaches occurring. There is no specific guidance on how to apply overtopping assumptions to system wide risk analysis. However, the approach is consistent with our risk and uncertainty guidance. The overtopping without failure assumption is also consistent with the DWR Urban Levee Design Criteria and FEMA mapping approaches. A table of adopted regulated peak flows for this study is provided in Table H. Due to upstream conditions, hydrographs for channel and right overbanks are required for events greater than a 1% (1/100) ACE event.

Table H
Flood Frequency Flow Estimates, San Joaquin River near Vernalis
Regulated Conditions

| Peak Flow | Peak Discharge by ACE (CFS) | | | | | | |
|---|-----------------------------|------------|-----------|-----------|-----------|-------------|-------------|
| | 50% ACE | 10% ACE | 4% ACE | 2% ACE | 1% ACE | 0.5% ACE | 0.2% ACE |
| Chanel | 6400 | 35100 | 42300 | 47700 | 78200 | 124600 | 165200 |
| Right Overbank | 0 | 0 | 0 | 0 | 0 | 20400 | 60500 |
| Total | 6400 | 35100 | 42300 | 47700 | 78200 | 144500 | 224100 |
| Note: Peak channel plus right overbank flow may not equal peak total flow due to hydrograph timing. | | | | | | | |

The California Department of Water Resources is currently conducting a study of Central Valley Hydrology. The Central Valley Hydrology Study (CVHS) will provide more recent hydrologic frequency estimates throughout the study area. However, the results were not finalized at the time of this study. The draft flood frequency estimates from the CVHS study were compared to the comp study estimates and found to be similar.

c. Calaveras River and Mormon Slough. The upstream hydraulic model boundary for and Calaveras River and Mormon Slough is the USACE stream gage Mormon Slough at Bellota. The drainage area at the gage is 470 square miles. Hydrologic analysis is described in the hydrology appendix dated April 2014. Flood frequency curves and a suite of 10-day hydrographs were developed for the Mormon Slough at Bellota gage.

The period of record analyzed is 104 years from 1907 to 2010. Unregulated flow frequency statistics for the the Mormon Slough at Bellota Gage are provided in Table I. Unregulated discharges by frequency and duration are provided in Table J. The unregulated flood discharge data is used in the levee performance analysis using risk and uncertainty procedures. The one-day duration was used as the unregulated flow in the performance analysis. Although the frequency analysis utilized 104 years of record, an equivalent period of record of 52-yr was utilized in performance analysis to account for uncertainty in estimating the ungaged unregulated flow between New Hogan Dam and Bellota. The durations indicate how long an average flood of the given Annual Chance Exceedance is above a given discharge.

Table I
Rain Flood Frequency Statistics, Mormon Slough at Bellota

Unregulated Conditions

| Flood Duration | Adopted Log Mean | Adopted Log Standard Deviation | Adopted Log Skew | Record (Years) | |
|----------------|------------------|--------------------------------|------------------|-----------------|---------------------------|
| | | | | Years Evaluated | Years Used for Statistics |
| 1-Day | 3.775 | 0.482 | -0.810 | 1907 - 2010 | 104 |
| 3-Day | 3.608 | 0.475 | -0.753 | 1907 - 2010 | 104 |
| 7-Day | 3.417 | 0.464 | -0.666 | 1907 - 2010 | 104 |
| 15-Day | 3.240 | 0.461 | -0.671 | 1907 - 2010 | 104 |
| 30-Day | 3.079 | 0.448 | -0.668 | 1907 - 2010 | 104 |

Table J
Flood Frequency, Mormon Slough at Bellota

Unregulated Conditions

| Flood Duration | Duration Average Discharge by ACE (CFS) | | | | | | |
|----------------|---|---------|--------|--------|--------|----------|----------|
| | 50% ACE | 10% ACE | 4% ACE | 2% ACE | 1% ACE | 0.5% ACE | 0.2% ACE |
| 1-Day | 6900 | 21700 | 29700 | 35300 | 40500 | 45400 | 51300 |
| 3-Day | 4600 | 14600 | 20200 | 24200 | 28000 | 31600 | 36100 |
| 7-Day | 2900 | 9300 | 13000 | 15800 | 18500 | 21100 | 24500 |
| 15-Day | 2000 | 6100 | 8600 | 10300 | 12100 | 13800 | 16000 |
| 30-Day | 1300 | 4100 | 5700 | 6800 | 7900 | 9000 | 10400 |

A rainfall runoff model was used to derive concurrent local flow hydrographs as internal boundary conditions in the HEC-RAS hydraulic model reaches downstream of Mormon Slough at Bellota. A table of adopted regulated peak flows for this study is provided in Table K.

Table K
Flood Frequency, Mormon Slough at Bellota

Regulated Conditions

| | Duration Average Discharge by ACE (CFS) | | | | | | |
|-----------|---|---------|--------|--------|--------|----------|----------|
| | 50% ACE | 10% ACE | 4% ACE | 2% ACE | 1% ACE | 0.5% ACE | 0.2% ACE |
| Peak Flow | 3520 | 9530 | 10640 | 12500 | 12500 | 12500 | 16000 |

d. Delta Stage-Frequency. A stage frequency analysis was conducted at four stream gages in the Sacramento-San Joaquin Delta that serve as downstream boundary conditions in the hydraulic models. The stage-frequency analysis was conducted for DWR stream gages; Old River at Clifton Court Ferry (B95340), Middle River at Bowden Highway (B95500), San Joaquin River at Ringe Pump (B95620), and Stockton Ship Channel at Burns Cutoff (B95660). Stage-frequency estimates were developed for three future sea level conditions including 2010, 2020, and 2070. The frequency analysis is described in detail in the Technical Memorandum, Delta Stage-Frequency Analysis for Alternative Comparisons, 9 May 2014.

The stage frequency analysis was based on stage data from the period from 1953 to 2009. Historical peak stages would have been higher under existing (2010) sea level conditions. Historical stage data were adjusted to 2010 sea level conditions for use in the frequency analysis.

Graphical stage-frequency curves were developed for each gage by plotting the historical stage records using Weibul plotting positions. Extrapolation of the stage frequency curves from 2% ACE to 0.2% ACE events was based on hydraulic model simulations of the San Joaquin River system. These relationships between stage and flow at each gage site are currently the best available analysis of hydraulic conditions in the delta for extreme flood events. The resulting stage frequency curves are provided in Tables L, M, and N.

Future Sea level Rise was computed following the method outlined in EC 1165-2-212 for three scenarios. Curve I is based on the historical rate of sea level rise. Curve II reflects an intermediate estimate of the future rate of sea level rise. Curve III reflects a high estimate of the future rate of sea level rise. The Curve II rates were used to estimate future increases in sea level over the period 2010 through 2070 and are provided in Table O. The rates provided for Curve I and Curve III are provided to describe the sensitivity of 2070 sea level conditions to this assumption. Future sea level rise was assumed to impact all flood frequencies the same amount. The Delta consists of a network of channels and it was assumed the hydraulic characteristics for higher sea level conditions would be very similar to the existing conditions.

Table L
Mean Stage estimates by Annual Chance of Exceedance, 2010 Sea Level Conditions

| ACE | Mean Stage (Feet-NAVD88) | | | |
|--|----------------------------------|----------------------------|---------------------------------------|---------------------------------|
| | Old River at Clifton Court Ferry | Middle River at Borden Hwy | Stockton Ship Channel at Burns Cutoff | San Joaquin River at Ringe Pump |
| 0.002 (1/500) | 13.08* | 11.20* | 13.01* | 12.91* |
| 0.005 (1/200) | 12.12* | 9.90* | 12.12* | 12.02* |
| 0.010 (1/100) | 11.44* | 9.80* | 10.10* | 10.00* |
| 0.020 (1/50) | 9.95 | 9.57 | 9.90 | 9.80 |
| 0.040 (1/25) | 9.75 | 9.50 | 9.70 | 9.60 |
| 0.100 (1/10) | 9.35 | 9.10 | 9.30 | 9.20 |
| 0.200 (1/5) | 8.70 | 8.55 | 8.70 | 8.60 |
| 0.300 (1/3) | 7.70 | 7.80 | 8.15 | 8.05 |
| 0.500 (1/2) | 7.15 | 7.25 | 7.70 | 7.60 |
| 0.950 (1/1.05) | 6.35 | 6.45 | 6.70 | 6.60 |
| * Stage estimates for events larger than 0.020 (1/50) ACE are based on hydraulic model extrapolation. While suitable for economic analysis, estimates should be refined for design Future Sea Level based EC 1165-2-212 Curve II Note: Curve I and II estimates can be computed using values in Table 18. | | | | |

Table M
Mean Stage estimates by Annual Chance of Exceedance, 2020 Sea Level Conditions

| ACE | Mean Stage (Feet-NAVD88) | | | |
|---|----------------------------------|----------------------------|---------------------------------------|---------------------------------|
| | Old River at Clifton Court Ferry | Middle River at Borden Hwy | Stockton Ship Channel at Burns Cutoff | San Joaquin River at Ringe Pump |
| 0.002 (1/500) | 13.24* | 11.36* | 13.17* | 13.07* |
| 0.005 (1/200) | 12.28* | 10.06* | 12.28* | 12.18* |
| 0.010 (1/100) | 11.60* | 9.96* | 10.26* | 10.16* |
| 0.020 (1/50) | 10.11 | 9.73 | 10.06 | 9.96 |
| 0.040 (1/25) | 9.91 | 9.66 | 9.86 | 9.76 |
| 0.100 (1/10) | 9.51 | 9.26 | 9.46 | 9.36 |
| 0.200 (1/5) | 8.86 | 8.71 | 8.86 | 8.76 |
| 0.300 (1/3) | 7.86 | 7.96 | 8.31 | 8.21 |
| 0.500 (1/2) | 7.31 | 7.41 | 7.86 | 7.76 |
| 0.950 (1/1.05) | 6.51 | 6.61 | 6.86 | 6.76 |
| * Stage estimates for events larger than 0.02 (1/50) ACE are based on hydraulic model extrapolation. While suitable for economic analysis, estimates should be refined for design Future Sea Level based EC 1165-2-212 Curve II Note: Curve I and II estimates can be computed using values in Table 18. | | | | |

Table N
Mean Stage estimates by Annual Chance of Exceedance, 2070 Sea Level Conditions

| ACE | Mean Stage (Feet-NAVD88) | | | |
|--|----------------------------------|----------------------------|---------------------------------------|---------------------------------|
| | Old River at Clifton Court Ferry | Middle River at Borden Hwy | Stockton Ship Channel at Burns Cutoff | San Joaquin River at Ringe Pump |
| 0.002 (1/500) | 14.74* | 12.86* | 14.67* | 14.57* |
| 0.005 (1/200) | 13.78* | 11.56* | 13.78* | 13.68* |
| 0.010 (1/100) | 13.10* | 11.46* | 11.76* | 11.66* |
| 0.020 (1/50) | 11.61 | 11.23 | 11.56 | 11.46 |
| 0.040 (1/25) | 11.41 | 11.16 | 11.36 | 11.26 |
| 0.100 (1/10) | 11.01 | 10.76 | 10.96 | 10.86 |
| 0.200 (1/5) | 10.36 | 10.21 | 10.36 | 10.26 |
| 0.300 (1/3) | 9.36 | 9.46 | 9.81 | 9.71 |
| 0.500 (1/2) | 8.81 | 8.91 | 9.36 | 9.26 |
| 0.950 (1/1.05) | 8.01 | 8.11 | 8.36 | 8.26 |
| * Stage estimates for events larger than 0.020 (1/50) ACE are based on hydraulic model extrapolation. While suitable for economic analysis, estimates should be refined for design Future Sea Level based EC 1165-2-212 Curve II Note: Curve I and II estimates can be computed using values in Table 18. | | | | |

Table O
Sea Level Rise from 2010 Conditions

| Year | Sea Level Rise from 2010 Conditions (Feet) | | |
|---|--|--------------------|-------------------------|
| | Curve I (Sensitivity) | Curve II (Adopted) | Curve III (Sensitivity) |
| 2010 | 0.00 | 0.00 | 0.00 |
| 2015 | 0.05 | 0.07 | 0.10 |
| 2020 | 0.10 | 0.16 | 0.23 |
| 2025 | 0.15 | 0.26 | 0.37 |
| 2030 | 0.21 | 0.37 | 0.53 |
| 2035 | 0.28 | 0.49 | 0.70 |
| 2040 | 0.34 | 0.62 | 0.90 |
| 2045 | 0.42 | 0.77 | 1.12 |
| 2050 | 0.49 | 0.92 | 1.35 |
| 2055 | 0.58 | 1.09 | 1.60 |
| 2060 | 0.66 | 1.27 | 1.87 |
| 2065 | 0.75 | 1.46 | 2.16 |
| 2070 | 0.85 | 1.66 | 2.47 |
| Rate of Sea Level Rise based on EC 1165-2-212 | | | |

e. Interior Drainage. An interior drainage analysis was performed by Peterson-Brustad Incorporated (PBI) for Bear Creek, Mosher Creek, and French Camp Slough sub-basins impacting the study area. A storm centered over the urban area of Stockton was utilized for the analysis. The interior drainage analysis evaluated rainfall runoff and flood depths for 50% (1/2) ACE through 0.2% (1/500) ACE flood events. Storm events with 72-hour durations were

evaluated. The analysis is typically 3-days for storm water detention basins. The analysis utilized an HEC-HMS model to compute sub basin runoff and a FLO-2D two dimensional hydraulic model to route the runoff through the study area. The analysis indicated that interior drainage was not a significant factor in estimating annualized flood damages within the study area. Therefore, interior drainage was not studied in further detail in the alternatives analysis.

2.7 Hydraulics

2.7.1 General

The following provides a summary of the hydraulic design and evaluation of the final array of alternatives.

a. Hydraulic Models: Four separate hydraulic models, adapted from existing hydraulic models, were utilized to evaluate the final alternatives for this study. Water surface profiles for the San Joaquin River were computed using a HEC-RAS unsteady one-dimensional flow model of the San Joaquin River system. Water surface profiles for Calaveras River and Mormon Slough were computed using a HEC-RAS unsteady flow model of the system. Levee breach simulations for the area North of French Camp Slough were conducted using the North FLO-2D model. Levee breach simulations for the area south of French Camp Slough were conducted using the south FLO-2D model.

b. Hydraulic Design Features. Hydraulic design features incorporated into the alternatives included levee raises, erosion protection, closure structures and setback levees.

b. Wind Wave Analysis: An analysis of wind wave run-up, wind wave setup, overtopping discharge, and wind wave erosion was conducted for levee reaches within the study area.

c. Project Performance and Flood Risk. Performance and Flood Risk were assessed using the USACE FDA model version 1.2.5a (USACE, 2010). The FDA model combines flow-frequency, stage-discharge, geotechnical fragility, and stage-damage relationships to estimate damages. Uncertainty in each relationship is incorporated by assigning uncertainty estimates and applying a Monte Carlo type approach to combine the results.

d. Potential Adverse Effects. A potential adverse hydraulic effect would be induced flooding within the system. Induced flooding could result from a project increasing the depth, duration, or frequency of flooding. The potential for induced flooding was evaluated by comparing with-project and no action plans throughout the system. Depending on the location within the project area induced flooding was determined to be either equal to the no action alternative, or was reduced compared to the induced flooding potential for the no-action alternative.

e. Climate Change. The delta reaches of the study area are affected by changes in sea level. Project performance was estimated for both 2010 (beginning of economic analysis) and 2070 (end of economic analysis) conditions using the hydraulic model results for 2010 and 2070 sea level conditions at downstream boundary conditions.

f. California State Urban Level of Protection (ULOP). Although the California State Urban Levee of Protection is not a federal objective of the study, it is a local sponsor objective. For levees to meet the ULOP requirements they must be designed to meet the requirements in the State of California Urban Levee Design Criteria (ULDC). The hydraulic performance of each alternative relative to the ULOP requirements was conducted. The results are provided in the hydraulic appendix.

g. General Hydraulic Design: All project features were designed to meet current USACE design requirements. It should be noted there is no specific design requirements for levee height. The design height of the final alternatives is based on reasonably maximizing net benefits. The determination of maximum net benefits is described in the economic appendices and the plan formulation document.

2.8 Soil Design

2.8.1 General

The geotechnical appendix presents the results of geotechnical analyses and feasibility level geotechnical recommendations to address technical deficiencies in the flood risk management system protecting the Lower San Joaquin River Feasibility Study area (LSJRFS). For the geotechnical engineering evaluation of the LSJRFS area, the following tasks were performed and summarized in the report:

- review of currently available geology, geomorphology, and geotechnical information
- review of past performance and flood control system construction history/improvements
- identification of levee performance deficiencies through geotechnical analysis and engineering judgment
- probabilistic geotechnical analysis and development of levee performance curves
- seismic study of existing levees
- development of geotechnical conclusions and recommendations

2.8.2 Design Criteria

USACE standard levee design and construction criteria as established in both national (HQ) and local (District and Division) policy documents were followed during analyses and development of mitigation regarding geometry, seepage and stability, vegetation and access, fill material, bank protection, and seismicity and liquefaction.

2.8.3 Evaluation of Existing Condition

Existing conditions were initially characterized by 14 Index points representing approximately 40-miles of existing levees within the study area. These 14 index points were selected for geotechnical analysis to represent the critical surface and subsurface conditions of each planning reach in order to identify the geotechnical deficiencies of the reach. The sections were selected based on previous geotechnical analysis, past levee performance, existing levee improvements, subsurface data, laboratory test results, surface conditions, field reconnaissance, and levee

geometry. As part of the Planning process additional lengths of existing levees and also potential new levee alignments were added, expanding the project study area to roughly 90 miles. All of the existing and proposed levees with-project conditions were analyzed using the 14 index points.

Potential sources of levee distress considered in the analyses were underseepage through the levee foundation, through-seepage through the levee embankment, and instability of the landside levee slope under steady state conditions. The levees were evaluated against the above mentioned performance modes at five different water surface elevations. Using this method of selecting loading conditions, the levee performance curves would theoretically represent probability of poor performance at multiple flood frequencies.

For the results of the fragility curve, a judgment based conditional probability function was provided based on the existing and past erosion history of the levee and riverbank, maintenance, encroachments, vegetation on the levee slopes and within the levee critical area, animal burrows and other external damaging conditions. The total conditional probability of poor performance of the levee as a function of water elevation was developed by combining the probability of poor performance functions for four failure modes: underseepage, through-seepage, slope instability, and judgment.

2.8.4 Conclusions

2.8.4.1 South Stockton

The analyses performed for South Stockton indicated that the levees represented by index points LR-1, LR-2, and LR-3 in RD-17 did not meet minimum levee design criteria at various flood frequencies. Historical documentation indicates performance-related issues with seepage, slope instability, and erosion. The measures identified in this study to mitigate these performance issues, to create with-project conditions, typically included a cutoff wall and/or seepage berm.

2.8.4.2 Central Stockton

The analyses performed for Central Stockton indicated that the levees represented by index points FR-1 in RD-404, and SL-1 and SL-2 along Stockton Diverting Canal did not meet minimum levee design criteria at various flood frequencies. Historical documentation indicates performance-related issues with seepage and erosion along RD-404, erosion along the left bank of the Calaveras River with isolated areas of seepage, and erosion along the left bank of Stockton Diverting Canal. The measures identified in this study to mitigate these performance issues, to create with-project conditions, typically included a cutoff wall and/or seepage berm.

2.8.4.3 North Stockton

The analyses performed for North Stockton indicated that the levees represented by index points CR-1/CR-2 and D-4 along the right bank of the Calaveras River, and index point D-BS along Delta Brookside, did not meet minimum levee design criteria at various flood

frequencies. Historical documentation indicates performance-related issues with settlement, seepage, erosion, and animal burrowing activity along the Delta Brookside study area, and seepage and erosion along Delta Lincoln Village study area. The measures identified in this study to mitigate these performance issues, to create with-project conditions, typically included a cutoff wall and/or seepage berm.

2.8.4.4 Seismic Study

The results of seismic and liquefaction evaluation indicated isolated areas throughout the study area that are capable of inducing significant deformation of the levees. Some of the levees in North Stockton are classified as frequently hydraulically loaded levees due to the tide and may be susceptible to significant deformation due to a seismic event. However, most of the study area is unlikely to be capable of inducing flow failures, and thus deformation is not likely.

2.8.5 Recommended Design Recommendation

With the exception of some proposed closure structures and set-back levees, the predominant project recommendation was fix-in-place of existing structures. The predominant measure chosen to mitigate areas of poor performance was a cutoff wall and/or a seepage berm.

2.9 Civil Design

2.9.1 General

The PDT's decision at the beginning of the feasibility study was to utilize a computer based cost estimating system. The system would produce preliminary estimates within the short time frame and resources which the team faced under 3³. The quantitative work was based off Figures 2 through 5.

2.9.2 Abbreviations and Names

The following abbreviations correspond to the following location names for Figures 2 through 5, and for the cost estimating results below.

Table P. Names and Abbreviations for Levee Reaches for the North and Central Stockton Area and RD17

| Abbreviation | Location Name |
|---------------------|---|
| ST | Shema Tract (between Mosher Creek and Five Mile Creek) |
| MC | Mosher Creek |
| FM | Fourteen Mile Slough |
| FS | Five Mile Slough (between Shema Tract and Fourteen Mile Slough) |
| TS | Ten Mile Slough (between Fourteen Mile and Calaveras) |
| CR | Calaveras River |
| SDC | Stockton Diverting Canal |
| MS | Mormon Channel |
| SJR | San Joaquin River in the areas of the delta, RD404, and RD17 |
| FCS | French Camp Slough |
| PTC | Potter Creek (SDC extension) |
| SC | Smith Canal |
| DC | Duck Creek (French Camp Slough extension) |
| PC | Paradise Cut |

2.9.3 Parametric Estimating

The parametric software tool SPK used to calculate construction quantities is called PCET (short for parametric cost estimating tool). The PCET program contains levee fix templates for calculating quantities by inputting geometric variables and design inputs. These variables conformed to EM 1110-2-1913 “Design and Construction of Levees,” Sacramento District CESPK-ED-G, SOP-03: “Geotechnical Levee Practice,” ETL 1110-2-571 “Guidelines for Landscaping and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures.” PCET inputs relied on ULE and National Levee Database datasets. Unit costs were then applied to PCET outputs in order to determine parametric costs. These unit costs were based on past projects in the vicinity of Sacramento, adapted to the San Joaquin area.

2.9.4 Segmental Cost Estimates

Based on experience with similar projects, the PDT began work using small project reach segments which were estimated for cost. This was a particularly useful strategy since the hydraulic flood plain analysis work wasn’t complete and without it one could not predict where a flood protection project would begin or end. Furthermore, any future refinements of the work wouldn’t be possible unless existing segments located beside the flood protection project were already completed (and could be either added incrementally, or deleted). The study area contains 92 miles of levee which was further evaluated using approximately 130 segments that were on average 3,700 feet in length. The result of this segmentation is presented in Figures 2 through 5. The figures help define the resultant fix locations presented in Table 4.

2.9.5 Alternative Estimates

2.9.5.1 General Construction

Alternative cost estimates were prepared for focused and final array alternatives. The cost estimate for these alternatives are based on estimated quantities that are translated to costs when implementing an array of new levees, fixing existing levees, or incorporating new features within existing levees. The estimates are based on the type of fix needed such as a cutoff wall, a seepage berm, rock revetments, or general geometry improvements. What was also taken into consideration was the probability of requiring a bridge, or if channel improvements were needed. Other cost considerations included real estate acquisitions, environmental and cultural resources mitigation, O&M, design costs, encroachment relocations, and construction management costs.

2.9.5.2 Construction with Raise

Corps guidance requires that sea level rise be taken into consideration for a 50 year time horizon. The ensuing sea level rise factors into the planning for existing project levee heights. The PDT concluded that a few areas required this levee improvement in height which resulted in levee raises in a few locations along RD17, North Stockton, Central Stockton and the Delta Front. The sea level rise estimates were added to the final array of alternatives creating LS-7, LS-8 and LS-9. Only minimal height raises were needed to meet this objective and were included into the focused array estimates. The incremental addition of SLR proved to be economically cost justified with increased net benefits. Alternatives LS-2A through LS-4 do not incorporate height improvements for sea level rise, and thus were not considered further for the focused array. The list in Table D does not include alternatives LS-2A through LS-4 for this reason.

2.9.5.3 Real Estate

The study initially based the cost estimate of determining affected real estate parcels on the District's standard 20-foot landside easement. The cost segments were evaluated on land use types which were orchard, agriculture, residential, or commercial. The sponsor requested an exception to reduce the landside easement to 10-feet. The smaller easement was granted since alternatives LS-7a, LS-8a, and LS-9a have on average approximately 600 parcels which would likely require a real estate take. The 10-foot easement was only adopted for existing federal system levees where the levee toe remains fixed. The system is considered a new levee if the toe of the levee encroaches on the existing easement and a 15-foot easement is required. If the easement on an existing levee whose toe remains fixed is less than 10-feet there is a requirement to purchase additional property necessary to comply with the 10-foot requirement. A waterside easement of 15-feet is required regardless of whether this is an existing levee (Federal) or if this is a new levee (non-Federal). Securing this easement is expected to be a relatively low cost and was excluded from the parametric estimates. The cost is to be evaluated during the TSP revision. Encroachment and woody vegetation removal, remediation, or relocation costs were not added to the total project cost because the local sponsor owns and maintains the 10-foot landside easement requirement already.

For new levees the design will include a 15-foot right-of-way (ROW) per the ETL measured from the levee toe for both water side and land side. Should a seepage or stability berm be required the ROW is measured from the toe of these berms.

2.9.5.4 Operation and Maintenance

Operation and maintenance costs were reflective of additional effort by the local managing agency (LMA) to properly maintain new features. The increased level of effort was qualitatively evaluated and assigned a percentage based on increased O&M cross section and best judgment. The LMA's annual budgets were used to prorate costs per length of maintained area and were multiplied by the increased percentage of effort to obtain an annualized O&M cost. Some of the items that were qualitatively evaluated when determining the increased level of effort were the following.

- Inspection area
- Mowing and vegetation control
- Rodent control
- Pumps, valves, and appurtenances

Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) values did not include the LMA's existing budgets to maintain new features. In many cases the project improvements should reduce O&M efforts. However, the PDT determined that additional OMRR&R costs should be factored to account for project features over a 50-year design life. After selection of the TSP, future discussions with the LMA's about project features and how O&M will be implemented shall refine these estimates further.

2.9.5.5 Encroachments

Department of Water Resources (DWR) levee logs contributed to most of the utility inventory. Other logs were available as GIS data from the City of Stockton. For areas with no coverage the unallocated item cost and construction cost contingency was used for estimating purposes.

Utility relocation costs were generated from a series of typical penetration conditions. Most often the fix involved raising pipe(s) invert above the design water surface level through the levee. This typically involved replacing the pipeline and adding positive closure valves to meet Corps EM 1110-2-1913 policy.

2.9.5.6 Pre-Construction, Engineering and Design (PED), and Construction Management (CM)

The cost estimates included both PED and CM which were assigned a percentage of the construction, environmental mitigation, and utility relocations. PED was assigned a value of 15% based on historical values. CM was assigned 10% of the costs.

2.9.6 Borrow Sites/Disposal Areas

Five borrow areas have been identified as potential borrow sites. The first of these locations is west of the Stockton East Water District (SEWD) water treatment plant (WTP). The SEWD is interested in providing a borrow site near the WTP in order to excavate through a fairly impenetrable clay layer that would allow water recharging to occur more easily after the borrow material has been removed. This site would be 265 acres and could potentially be excavated as deep as 20-feet.

Another site would be at the Tidewater development near French Camp Slough and Highway 99. This site is a 93 acre basin with potentially 1,700 acre-feet of earth volume.

At the Mariposa Lake Development nestled between Mariposa Road and State Route 4 east of S.R. 99 is another potential borrow site. The entire site is approximately 6 square miles and approximately 3,500 acres of the site would be available for borrow.

Over 1 million cubic yards of unsuitable soil are expected to be used at commercial and local disposal sites. Additionally, some of this soil can be used to mitigate for the borrow areas and fill in low spots. The estimate is that 50% of excavated material will be able to be reused.

2.9.7 Construction Access, Haul Routes and Staging Areas

For construction and staging areas the early planning analysis indicates that sufficient sponsor, county, or city property exists that additional areas do not need to be purchased. These local properties in the form of empty lots, right-of-ways, and easements would be available for these functions. Thus, specific access and staging areas were not identified. In areas where the sponsor lacked proper access or easement, the “unallocated items” and contingencies within the cost estimate would appropriately cover the additional lands needed to facilitate construction of the flood risk management features.

During the early planning of alternatives, haul routes were not identified. Haul routes are expected to be fairly direct between the borrow areas and the construction. Borrow areas are expected to be located within 25 miles of the construction. Additionally, multiple borrow areas are expected to be needed. It is unclear which borrow areas would continue to be viable until the start of construction, and thus the time and effort spent identifying specific haul routes may not prove beneficial.

2.10 Cost Engineering

2.10.1 General

The cost estimates under the study have been prepared under ER 1110-2-1302 Civil Works Cost Engineering which describes levels of detail with respect to cost. The classes are based on ASTM E 2516-06, Standard Classification for Cost Estimate Classification System. The Parametric Cost Estimating Tool (PCET) used to parametrically define the initial and final array of alternatives is based on a Class 4 level of detail. The Tentatively Selected Plan (TSP) is based

on a Class 3 level of detail prepared using computer aided cost software (MCACES) and is referred to as the TSP in this report.

The quantities and project cost estimates for the final array of alternatives were prepared by Civil Design utilizing unit costs for typical construction items as developed by Cost Engineering Section and other cost data furnished by the Environmental Planning and Real Estate sections. A summary of estimates for the final array of alternatives is provided in the appendix to this engineering summary.

Real estate estimates were based on footprint requirements for project construction, operation and maintenance provided by Civil Design Section A. Alternative estimates were prepared based on refinements to the preliminary layouts, features, and measures as determined by screening analysis as performed by Planning Division, and input from the potential non-Federal sponsors. Design guidance for cost estimates comes from ER 1110-2-1302, Civil Works Cost Engineering.

2.10.2 Cost Engineering Analysis

This section indicates Cost Engineering results for the final array of alternatives leading to the TSP. There are seven alternatives in the final array as listed below. For descriptions of the alternatives, see Section 2.4.4 – Final Array.

2.10.3 Preliminary Cost Analysis

2.10.3.1 Quantity Takeoffs

Quantities for most project items relative to levee construction/modifications were developed by Civil Design Section using a spreadsheet tool. This spreadsheet utilizes generic cross sections with predetermined cost elements (typical levee work such as clearing and grubbing, earth fill, aggregate base, etc). Civil Design provides quantities for those elements based on input of design levee parameters as determined by the Geotechnical Section.

2.10.3.2 General Methodology in Cost Estimate Preparation

During this period of alternatives study leading to the TSP, ER 1110-2-1302 requires Class 4 Cost Estimates as a minimum. Class 4 estimates are primarily stochastic in nature with an expected accuracy range index of 3 to 12 where the value of ‘3’ represents +30/-15 percent and a value of 12 represents a +120/-60 percent range. In developing the class 4 cost estimates for the alternatives, the Cost Engineering team (Cost Engineers and Civil Design Engineers) utilized a number of different methods to determine project costs.

2.10.3.3 Levee Improvement Cost Summary

Generic/parametric/characteristic unit construction costs for many typical levee improvement elements were developed using estimating software MII (MCACES, 2nd Generation). For a typical element such as a slurry wall or borrow material (acquisition

and placement), a unit cost was established based on a ‘typical’ crew, production rate, material cost, assumed/typical haul distance, etc. Davis Bacon labor rates (2014), MII Equipment rates (2011 Equipment Book), current fuel prices (2014) and generic/typical Contractor markups were utilized to establish unit costs. For any particular levee improvement (such as to fix-in-place the levee by degrading, placing a slurry wall/seepage barrier and restoring the levee), the estimating exercise sums the quantities times the unit costs, adds a percentage for such items as mobilization and demobilization, and indicates a total cost per linear foot of levee improvement.

2.10.3.4 Historical Cost Data

Historical unit costs for some items have been utilized based on cost estimates for past projects in the vicinity of Sacramento. For example, pump station costs were based on costs for similar pump stations developed for the Natomas PACR. Cost data was also supplied by other disciplines, specifically Real Estate and Environmental (Mitigation).

2.10.3.5 Cost Engineering Experience

Cost Engineering judgment and experience was used to base some costs on a percentage of construction costs (e.g. Preconstruction Engineering and Design / PED cost, Construction Management cost). The percentages are based on historical data and typical rates used by SPK Cost Engineers in the past.

Each alternative consists of several separable areas divided into reaches/sub-alternatives of various lengths and each reach has an associated type of levee improvement. The sum of all applicable costs for each reach is entered into a spreadsheet that is a compilation of total project costs. The total project cost summaries (first cost) follow the Civil Works Work Breakdown Structure (CWWBS) code of accounts. Feature Codes typically involved in this estimate are 01-Lands and Damages (Real Estate), 02-Relocations, 06-Fish and Wildlife Facilities, 11-Levees and Floodwalls, 18-Cultural Resource Preservation, 30-Preconstruction Engineering and Design, and 31-Construction Management. The 30 and 31 accounts involve any costs associated with USACE staffing on the project for the federal share and anticipated costs associated with local sponsor costs for the non-federal share. The cost estimate for each Alternative is the summation of the costs from the major cost categories. The costs do not account for life cycle costs.

2.10.3.6 Environmental and Cultural Considerations

Environmental and cultural mitigation costs were developed as a percentage of total construction cost (on an incremental cost segment basis). The percentages for environmental costs ranged from minimal (5%) to high (35%) and dollar values were based on past historical SPK projects and judgment. The percentage for cultural costs were estimated at approximately 1% of the construction costs and included in the total project costs. Maps and geospatial tools were used to help evaluate segments and identify potential impacted resources. In addition, mitigation for borrow sites and for flood reduction management features were included in the overall environmental mitigation costs.

2.10.3.7 OMRR&R Costs

For a description of how the O&M costs were derived, refer to section 2.9.5.4. Table Q. provides the annual cost of OMRR&R for each alternative.

Table Q. Annual LSJ OMRR&R Costs

| OMRR&R COSTS | | |
|-------------------------|-------------------------------|---|
| Alternative | OMRR&R Annual Cost | OMRR&R Lifespan Cost (50 yr) |
| 7a | \$274,800 | \$13,740,000 |
| 7b | \$386,700 | \$19,335,000 |
| 8a | \$296,600 | \$14,830,000 |
| 8b | \$408,500 | \$20,425,000 |
| 9a | \$344,800 | \$17,240,000 |
| 9b | \$456,700 | \$22,835,000 |

2.10.3.8 Total Project Schedule (including Construction)

No formal construction schedule has been developed at this stage, but the assumption has been made that the yearly federal monetary allotment for the project will be approximately \$100M. The initial PED portion of the project is assumed to take about 2 years, with approximate total duration until construction completion for each alternative in the final array as indicated in the following table:

| APPROXIMATE DURATION | |
|-----------------------------|--------------|
| Alternative | Years |
| 7a | 12 |
| 7b | 15 |
| 8a | 12 |
| 8b | 15 |
| 9a | 12 |
| 9b | 15 |

2.10.3.9 Cost Uncertainties & Risk Analysis

There are inherent uncertainties in the costs at this level of design (alternatives analysis) since there is no detailed design, plans or specs. There are also inherent uncertainties as the construction contractor(s) are responsible for obtaining the construction materials, accomplishing the work in a timely manner as per the project due date, using overtime and/or multiple crews to accomplish the same, etc. Funding appropriations are typically uncertain. The Central Valley of California is home to many threatened/endangered species that require much of the work to be done within certain construction windows, typically May-October.

For this project, more than 50% of the costs for this project are directly related to levee improvements. A large percentage of this is obtaining and hauling materials for placement of levee fill or impervious fill material (clay cap). For the purposes of the cost estimate, the assumption has been made that stone material will be placed from the landside (trucked). Stone materials are expected to come from either the Bay Area or the Sierra Nevada mountains. Much of the existing levee material can be re-used but still must be hauled to/from stockpiles. Impervious fill is assumed to come from within 25 miles (one-way haul). The potential contractors are free to obtain borrow from wherever they see fit, as long as it meets specs. Haul costs in general have some uncertainty as material supply locations are up to the contractor, as well as whether the contractor uses their own trucks or utilizes independent truckers for hauling. Another work feature of high risk/costs are cutoff walls, particularly those using the deep soil mixing (DSM) method, which requires significant placement time.

An Abbreviated Cost Risk Analysis (ACRA) using the Cost MCX Abbreviated Risk Analysis Template (spreadsheet) was performed for each of the final array of alternatives. The alternative was divided into its main component areas (e.g. North Stockton, Central Stockton, and RD17) and risks were assessed relative to each area. The summary sheet for each alternative ACRA is included in the appendix to this engineering summary.

The ACRA meeting was held 4 NOV 2013 with the project manager and most PDT members. The meeting focused primarily on risk identification using the CRA template and brainstorming techniques. The risk analysis process involved dividing project costs into typical risk elements and placing them into a Risk Register, then identifying the risks/concerns relative to those risk elements, and then justifying the likelihood of the risk occurring and the impact if the risk occurs. A Risk Matrix utilizing weighted likelihood/impacts is used to establish the cost contingency to use for each risk element (work feature) for use in alternatives comparisons. Project risks were identified and the risk register developed within the spreadsheet for the component areas of each alternative. The likelihood of an impact on each risk element was assessed by the PDT. The draft risk register and results were then forwarded to the PDT for review.

Risk elements were identified for each alternative based on the Civil Works Work Breakdowns Structure (CWWBS) and work feature. Prime construction work features identified were Earthwork, Cutoff Walls, DSM walls (Seismic), and Slope/Erosion Protection. These items typically accounted for 80 percent or more of the costs, except for the Central Stockton area, where there are several diversion structures and bridges that are, with remaining construction features such as mob/demob, relocations, and hydroseeding, lumped together in a category for 'Remaining Construction Items.' The risk register thus serves the purpose of historical documenting as well as to support follow-on risk studies as the project and its accompanying risks evolve. The results of the ACRA therefore reflect the risk register parameters and are considered adequate for establishing contingencies for alternatives comparison.

To fully recognize its benefits, risk analysis must be considered as an ongoing process conducted concurrent to, and iteratively with, other important project processes such as

scope and execution plan development, resource planning, procurement planning, budgeting and scheduling.

2.10.3.10 Screening Level Costs

For draft Project First cost for each alternative (including the contingencies), see Chapter 3 of the draft report. All costs are considered preliminary and are only to be used to compare the relative cost between the Alternatives. Focus on the Cost Engineering data has been on the alternatives. Once the PDT has selected the TSP and any locally preferred plan (if different from the TSP), Feasibility Level design details and quantities (by Civil Design) and Cost Engineering data must be developed. This includes creation of feasibility level plans and associated quantities, development of a detailed MII estimate, a Total Project Schedule (including Construction), PDT estimates for Planning, Engineering and Design, an updated Cost and Schedule Risk Analysis and a Total Project Cost Summary (TPCS) extending costs out through the life of the Project. The MII estimate must be detailed indicating labor, equipment and materials with accompanying production rates.

2.10.4 Key Assumptions

2.10.4.1 Quantities and Parametric Cost Estimates

Cross Sections for the various levee improvements or new levees are representative of the levee reach. Where design is insufficient to produce detailed quantities for each reach, the use of these typical cross-sections represents quantities adequate to screen alternatives to the point of determining a tentatively selected plan. Unit Costs utilized are fair and reasonable.

2.10.4.2 Haul Distances

Levee Fill Borrow will come from within 25 miles (one-way haul).

2.10.4.3 Project Schedule

For each area of construction, PED and Real Estate acquisition will occur over 1 to 2 years prior to commencement of construction. For construction, the duration developed is based on the assumption that the yearly federal monetary allotment for the project will be approximately \$100M.

2.10.4.4 Real Estate

Real Estate Costs are reasonable.

2.10.4.5 Environmental Mitigation

Costs provided by the Environmental Specialists in Planning are reasonable.

2.10.4.6 Cultural Resources

Costs of 1.5% of the total project costs for Cultural Resources Surveys (cost shared) and 0.5% of the Federal Cost share for Data Recovery (100% federal cost) are sufficient.

2.10.4.7 PED Costs

A value of 15% of the Federal Share Construction Costs & 15% of Non-Federal Construction Costs are consistent with those used in recent years for feasibility studies performed by the Sacramento District.

2.10.4.8 Construction Management Costs

A value of 10% of Federal Share Construction Costs & 10% of Non-Federal Construction Costs are consistent with those used in recent years for feasibility studies performed by the Sacramento District.

2.11 Value Engineering

A Value Engineering Study was performed on the preliminary alternatives for this project in July 2013 with the final report date of 19 August 2013.

The objectives of the VE study were to validate, refine and optimize alternatives; facilitate communication; and improve value (increase performance and/or reduce cost). By meeting the objectives, the VE study was able to begin the process of identifying a final array of alternatives. The VE study introduced Value Metrics which analyzed cost and performance in order to calculate a project value. By the end of the VE study the effort had identified a draft final array which eventually led to the final array provided in Section 2.4.4 and Table D.

2.12 Environmental Engineering

Engineering Regulation (ER) 1165-2-132, HTRW Guidance for Civil Works Projects requires that a site investigation be conducted to identify and evaluate existing and potential HTRW issues. This HTRW Site Summary report was conducted in accordance with ER 1165-2-132 and ASTM 1526-05, Phase I ESA as a supplemental guidance. Regulatory database search reports and regulatory agencies' websites were reviewed and assessed for HTRW sites in the Study Area, along the 40 miles long levees proposed for new levee construction, modification and upgrades to the existing levees.

The Study Area for this report is defined as an area 40 miles wide along the proposed levees identified for the alternatives. The Lower Mormon Slough section was a separate study and was conducted as a Phase I Environmental Site Assessment (ESA) was completed in March 2014.

The Phase 1 report provides the data as being reasonably accurate as of May 2014. The status of HTRW sites are constantly changing and new HTRW sites may be added to the regulatory

databases over time. Currently unknown HTRW sites may also be located within the study area but would not be included in this report.

The Phase 1 report lists over 100 sites which are located within 0.25 miles of the LSJ proposed levees. The alternatives share all of the known sites except for seven active/closed sites located near the Calaveras and the Stockton Diverting Canal (LS-8a). An assessment was made of the Phase 1 report list for sites located within approximately 900 feet of the Calaveras/Stockton Diverting Canal portion of the 8a levees which are presented in Table R. below.

Table R. Active and Closed Hazardous Waste Sites Specific to Alternative LS-7a and the Potential for Levee Site Clean-Up as Low, Medium, or Possible During Construction

| Site | Possible Contaminant | Distance to Levee (ft) | Active or Closed Site | Potential for Levee Clean-up |
|--|---|-------------------------------|------------------------------|-------------------------------------|
| Brea Ag Service 1905 N. Broadway | Pesticide, fertilizer, gw contamination | ~ 250-ft | Unknown | Possible |
| Colon Property 5681 E. Marsh Rd. | Junkyard, possible lead in soil | ~ 350-ft | Active | Medium |
| Beacon Property #27 3300 Waterloo Rd. | Gasoline contamination | ~ 650-ft | Closed Site | Low |
| Fisco Warehouse 1648 Shaw Rd. | Diesel contamination | ~ 900-ft | Closed Site | Low |
| Don's Buggy Shop 3245 Wilson Way N | Gasoline contamination | ~ 800-ft | Closed Site | Low |
| Certified Grocers of California 1990 Piccoli St N | Diesel contamination | ~ 900-ft | Closed Site | Low |
| PG&E (Case #2) 4040 West Ln N | Gasoline contamination | ~ 900-ft | Closed Site | Low |

There is a low probability of having significant costs for contaminated soil removal based on the information provided in the Phase 1 report and from the results in Table R. The costs associated for HTRW for LS-7a are anticipated to be negligible compared to the overall construction costs. Based on this assessment, it does not appear that HTRW would have an impact on plan selection with respect to the LS-7 alternatives.

Alternative LS-9 includes the Mormon Channel bypass which was not included in the Phase 1 assessment described above. However, a Phase 1 assessment was provided for Mormon Channel early in 2014. The report highlights multiple locations of surface and subsurface waste along the banks and within the channel. Surface debris characterized in the report can be removed and disposed of properly without much incidence. What is unknown is the extent of the subsurface waste due to the surface waste which is noted. It does not appear that LS-9 would be precluded from continuing to be a viable alternative due to the anticipated costs associated with site remediation. However, it does appear that if a significant HTRW effort in Mormon Channel is needed, if the LS-9 alternative is selected as the recommended plan, and if the alternatives are all

within proximity of potentially being selected, then more consideration should be given to understanding the effort relative to the LS-9 HTRW issue.

CHAPTER 3 – TSP ALTERNATIVE LS-7a

3.1 General

The proposed alternative is meant to improve the existing levee system and reduce flood risk for the Central and North Stockton area.

Alternative LS-7 is identified as the preferred plan with higher net benefits than LS-8 and LS-9. LS-7a is compliant with Executive Order (EO) 11988 which removes RD17 from the study area and therefore is not in conflict with the EO guidance. The EO requires federal agencies to avoid long and short term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practical alternative. LS-7a has a project length of 22 ½ miles and includes geometric improvements to existing levees, cutoff walls, seismic fixes, erosion protection, control structures, and approximately 1 mile of new levee along Duck Creek. The extent of the project is shown in Figure 15. In addition, LS-7a would accommodate for height deficiencies due to future sea level rise.

The improved levee system includes a tie-back levee along the downstream portion of Duck Creek which ties into high ground near the Union Pacific Railroad berm. The new levee functions to keep high flows from flanking the existing levee system into central Stockton.

The project includes fixes and new levee along the following tributaries.

- French Camp Slough
- Duck Creek
- Mosher Creek
- Shima Tract
- Five Mile Creek
- Fourteen Mile Slough
- Ten Mile Slough
- Calaveras River

3.1.1 Feature Description – LS-7a

This section provides feature descriptions for Alternative LS-7a. The main features of LS-7a are the North and Central Stockton levee improvements.

For the individual levee segments that make up LS-7a, all of them required either geometric fixes to attain Corps standards and/or a structural improvement was necessary due to through-seepage, underseepage, or seismic deficiencies.

3.1.1.1 North Stockton Feature

The North Stockton feature length is 13.3 miles which requires 10.3 miles of cutoff wall. A cutoff wall is needed to reduce through and under-seepage. Fourteen Mile Slough and a little less than half of Ten Mile Slough did not require a cutoff wall. Reference Figures 2 and 3 for this information and for other information on the North Stockton area below.

A seismic fix was found to be required for 3 miles of levee for North Stockton. Most of California is under threat of seismic activity and these particular segments are under hydraulic loading for portions of the day which increases the risk of failure during a seismic event. Seven segments of Fourteen Mile Slough required a seismic fix (FM_20_L, FM_30L, FM_40L, and FM_60L). Two sections of Ten Mile Slough required a seismic fix (TS_10L, TS_20L).

For North Stockton a seepage berm was not recommended due to the higher cost of implementing a seepage berm relative to cutoff wall. Due to the density of housing and other infrastructure the lack of available real estate precluded the use of seepage berms in the area. A recommendation for new levee was also not a suggested part of the plan.

Levee geometry improvements are required for 4.5 miles of the North Stockton levee system. Geometric fixes would be required on Fourteen Mile Slough, the Calaveras River and Ten Mile Slough. Affected segments are FM_30L, FM_60L, CR_90R, TS_10L, TS_20L, and TS_30L.

Erosion protection improvements are required for 4.9 miles of levee along Fourteen Mile Slough, Five Mile Slough, Shima Tract, and Ten Mile Slough. This erosion protection is needed to diminish the effects of near daily hydraulic loading against the levee in these areas including wind and wave loading during storm events. The affected segments are FM_30L, FM_40L, FM_60L, FS_10R, ST_10R, ST_20R, TS_20L and TS_30L.

One control structure has been identified as being needed at Fourteen Mile Slough at high flow events. This structure would have adjustable gates and a pumping station to control water levels on Lincoln and Brookside Village levees. The operation and frequency of the gates will be defined during PED phase, but are expected to remain open normally.

3.1.1.2 Central Stockton Feature

Central Stockton features total 9.2 miles of improvements, all of which include cutoff wall. Reference Figure 2, 3, and 4 for this information and for other information on the Central Stockton area below.

A seepage berm, seismic fix, and new levee were not recommended for Central Stockton.

Levee geometry improvements are required for 2 miles of the Central Stockton levee system. Geometric fixes would be required for one levee segment of the Calaveras River and one levee segment of the San Joaquin River. Affected segments are CR_40L, and SJR_30R. Segment SJR_10_R would require geometry improvements for sea level raise.

Levees improvements along Duck Creek are necessary as a result of not improving the RD-17 levee system. These improvements help prevent flanking of the existing levees by high water from the Lower San Joaquin River. The Duck Creek levee segments are DC_20R, and DC_30R, extending to the Union Pacific Railroad embankment.

A control structure is required at Smith Canal at high flow events to keep both banks of Smith Canal from overtopping. The structure would have adjustable gates that will remain normally open and close during higher water events.

3.2 Estimated Costs

Estimated costs for the tentatively selected plan are based on parametric cost estimates. A more refined estimate of the TSP cost will be provided as part of Milestone 3.

3.2.1 Total Cost for LS-7a

The combined costs of North and Central Stockton to achieve the LS-7a alternative is provided in Table U. below.

Table S. Parametric Costs for Implementing Lower San Joaquin Alternative LS-7a

| | |
|---|----------------------|
| Fish and Wildlife Facilities | \$49,820,000 |
| Levees and Floodwalls | 416,758,000 |
| Floodway Control & Diversion Structures | 36,631,000 |
| Cultural Resource Preservation | 14,592,000 |
| Lands and Damages | 130,971,000 |
| Relocations | 25,528,000 |
| Pre-Construction, Engineering & Design | 77,670,000 |
| Construction Management | 51,779,000 |
| Project Cost Totals | \$803,750,000 |

3.3 Construction Schedule

The construction schedule is presented in Table T below. Table T. provides a breakout of the schedule for PED, real estate, and construction for North and Central Stockton. Escalation costs are not factored into the schedule in Table T.

The schedule concludes that Central Stockton is constructed prior to North Stockton. The benefits during construction are greater if constructed in this order. The benefits also outweigh the increased escalation costs incurred by higher by constructing Central Stockton first.

Table T. Construction Schedule for the LSJ TSP Relative to PED, Real Estate, and Construction with Respect to Years for LS-7a

| LSJR CONSTRUCTION SCHEDULE - ALTERNATIVE 7a | | | | | | | | | | | | | |
|---|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| BASIN | DESCRIPTION | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
| | | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | YEAR 6 | YEAR 7 | YEAR 8 | YEAR 9 | YEAR 10 | YEAR 11 | YEAR 12 |
| CENTRAL STOCKTON | PED | | | | | | | | | | | | |
| | REAL ESTATE | | | | | | | | | | | | |
| | CONSTRUCTION | | | | | | | | | | | | |
| NORTH STOCKTON | PED | | | | | | | | | | | | |
| | REAL ESTATE | | | | | | | | | | | | |
| | CONSTRUCTION | | | | | | | | | | | | |

The construction schedule was formulated on a variety of inputs and best estimates for production rates. The three big design constraints that needed to be evaluated holistically were: annual appropriations, construction production rates, and air emission concerns. While no specific one of these areas would drive the schedule, they all serve as inputs to the construction schedule. For the purposes of this study, an annual appropriation of 100 million (federal) was targeted along with real estate constraints of 1 year for non-title and 2 years for title acquisitions.

3.4 Conclusion

Alternative LS-7a is the recommended plan for the Lower San Joaquin Feasibility Study based on the FDA analysis for maximizing net benefits. Alternative LS-7a includes levee fixes for 22 1/2 miles including geometric improvements to existing levees, cutoff walls, seismic fixes, erosion protection, control structures. The recommended plan includes the construction of approximately 1 mile of new levee along Duck Creek and any new levees and 7a would accommodate for height deficiencies due to future sea level rise.

The cost of the recommended plan is provided in Chapter 3 of the draft report. Approximately 75% of the cost is projected for upgrades to the North Stockton area. Construction can reasonably be expected to last 12 years.

For more information on specific analysis presented refer to the various engineering appendices including geotechnical engineering/soils, and hydrology/hydraulics.

APPENDIX

TABLES

Table 1. Geographical Location and Description of Initial Alternatives for the LSJ Feasibility Study for the North Stockton and Central Stockton Area.

| Geographical Location | Alternative | Description of Alternative |
|------------------------------|--------------------|--|
| North Stockton | A | Delta Front from the intersection of Twin Brooks Lane and I-5 south along the existing levee located west of I-5, west on 5-Mile Slough, then south along the east side of the slough parallel to Hatchers Cir and Fort Donelson Dr encircling the north side of Lincoln Village West and continuing between W. Swain Rd and Canyon Creek Road to nearly Pershing Ave. |
| North Stockton | B | Delta Front from the intersection of Twin Brooks Lane and I-5 south along the existing levee located west of I-5, west on 5-Mile Slough, then south along the levee parallel to Hatchers Cir and Fort Donelson Dr continuing south along Brookside Road around Brookside Golf and Country Club continuing upstream of the right bank of the Calaveras River to El Dorado Street. |
| North Stockton | C | Delta Front from the intersection of Twin Brooks Lane and I-5 south along the existing levee located west of I-5, west on 5-Mile Slough, then south along the west side of the slough parallel to Hatchers Cir and Fort Donelson Dr encircling the south side of Lincoln Village West and continuing between W. Swain Rd and Canyon Creek Road to nearly Pershing Ave. |
| North Stockton | D | From I-5 and Lincoln Village West along the south side of the slough continuing south along Brookside Road around Brookside Golf and Country Club continuing upstream of the right bank of the Calaveras River to El Dorado Street. |
| North Stockton | E | From the Delta front up the right bank of the Calaveras River past the Stockton Diverting Canal to Cherryland Avenue. |
| North Stockton | F | Delta Front from the intersection of Twin Brooks Lane and I-5 south along the existing levee located west of I-5, west on 5-Mile Slough, then south along the levee parallel to Hatchers Cir and Fort Donelson Dr continuing south along Brookside Road around Brookside Golf and Country Club continuing upstream of the right bank of the Calaveras River to Cherryland Avenue. |
| Central Stockton | A | The left bank of the Calaveras River from approximately the intersection of Yacht Harbor Drive and Fairway Drive to the intersection with the Mormon Channel bypass. |
| Central Stockton | B | The east side of the Delta from just south of Country Club Blvd across the Smith Canal entrance (to Peninsula with closure gate structure). From the left bank of the Calaveras River from approximately the intersection of Yacht Harbor Drive and Fairway Drive to Pacific Avenue. |
| Central Stockton | C | From just south of the Port of Stockton shipping channel and the San Joaquin River to upstream of French Camp Slough to Walker Slough past I-5 to the first bend past I-5 on Walker Slough. |
| Central Stockton | D | The left bank of the Calaveras River from approximately the intersection of Yacht Harbor Drive and Fairway Drive to the intersection with the Mormon Channel bypass. The east side of the Delta from just south of Country Club Blvd across the Smith Canal entrance (to Peninsula). From just south of the Port of Stockton shipping channel and the San Joaquin River to upstream of French Camp Slough to Walker Slough past I-5 to the first bend past I-5 on Walker Slough. |
| Central Stockton | E | From the left bank of the Calaveras River from approximately the intersection of Yacht Harbor Drive and Fairway Drive to Pacific Avenue. Improvements around the existing levee around Smith Canal. |

| Geographical Location | Alternative | Description of Alternative |
|------------------------------|--------------------|--|
| Central Stockton | F | The east side of the Delta from just south of Country Club Blvd across the Smith Canal entrance (to Peninsula with closure gate structure). From the left bank of the Calaveras River from approximately the intersection of Yacht Harbor Drive and Fairway Drive to Pacific Avenue. From just south of the Port of Stockton shipping channel and the San Joaquin River to upstream of French Camp Slough to Walker Slough past I-5 to the first bend past I-5 on Walker Slough. |
| Central Stockton | G | Diversion and improvement to Mormon Channel capacity of up to 1,200 cfs from Stockton Diverting Canal. The improvements along Mormon Channel would extend over 33,400 linear feet (6.3 miles), and include flood containment berms, bridge and culvert replacements, road relocations and channel clearing. This alternative provides for floodplain restoration in accordance with E.O. 11988 ecosystem/floodplain restoration goals. |

Table 2. Geographical Location and Description of Initial Alternatives for the LSJ Feasibility Study for the San Joaquin River RD17 Area.

| Geographical Location | Alternative | Description of Alternative |
|------------------------------|--------------------|---|
| RD17 | A | From I-5 at the south fork of Walker Slough around Westin Ranch via French Camp Slough south along the San Joaquin River to State Route 20. |
| RD17 | B | South from State Route 20 along the tieback alignment to South Airport Way. |
| RD17 | C | From I-5 at the south fork of Walker Slough around Westin Ranch via French Camp Slough south along the San Joaquin River along the tieback alignment to South Airport Way. (Alts A+C) |
| RD17 | D | From I-5 at the south fork of Walker Slough around Westin Ranch via French Camp Slough south to Galley Way and French Camp Road. At Galley Way/French Camp Road traverse east, then south along S. Wolfe Way, east along W. Bowman Rd one-fourth the distance to I-5. From this location on Bowman Rd continue directly south to Dos Reis Rd and continue back to SJ River and continue along the tieback alignment to South Airport Way. |
| RD17 | E | From I-5 at the south fork of Walker Slough around Westin Ranch via French Camp Slough south along the San Joaquin River along the tieback alignment to |
| RD17 | F | Weston Ranch Ring Levee – includes new levee around Weston Ranch development plus an extension of RD 404 levees to prevent flanking during lower frequency events. The levees would total 6.3 miles. |
| RD17 | G | San Joaquin River setback and tie-back extension – includes setback levees to limit protection of undeveloped floodplain within RD17. This alternative extends the tieback levee at the southern-most end of the reclamation district to minimize the probability of flanking during high water events. The setback/tie-back covers a total of 21.5 miles of levee. |

Table 3. Geographical Location and Description of Initial Alternatives for the LSJ Feasibility Study for the Mormon Channel Bypass and Paradise Cut.

| Alternative | Description of Alternative |
|----------------|--|
| Mormon Channel | Diversion and improvement to Mormon Channel capacity of up to 1,200 cfs from Stockton Diverting Canal. The improvements along Mormon Channel would extend over 33,400 linear feet (6.3 miles), and include flood containment berms, bridge and culvert replacements, road relocations and channel clearing. This alternative provides for floodplain restoration in accordance with E.O. 11988 ecosystem/floodplain restoration goals. |
| Paradise Cut | From the San Joaquin River to the intersection of W. Grimes Rd and S. Tracy Blvd. |

Table 4. Dominant Failure Mode by Index Point

| USACE Index | Failure Mode(s) |
|-------------|--|
| BL1 | Under-seepage; erosion |
| BL2 | Under-seepage; erosion |
| BL3 | Under-seepage; erosion |
| BL4 | Under-seepage; erosion |
| BR1 | Under-seepage; erosion |
| BR2 | Under-seepage; erosion |
| BR3 | Under-seepage; erosion |
| BR4 | Under-seepage; erosion |
| CL1 | Through-seepage; landside stability; erosion |
| CL2 | Through-seepage; landside stability; erosion |
| CR1 | Through-seepage; landside stability; erosion |
| CR2 | Through-seepage; landside stability; erosion |
| D1 | Erosion; landside stability |
| D2 | Erosion; landside stability |
| D3 | Under-seepage; landside stability; erosion |
| D4 | Landside stability; erosion |
| D5 | Landside stability; erosion |
| D6 | Through-seepage; erosion |
| FL1 | Under-seepage; erosion |
| FR1 | Under-seepage; erosion |
| LR1 | Erosion; under-seepage |
| LR2 | Seepage (through- and under-); landside stability; erosion |
| LR3 | Seepage (through- and under-); landside stability; erosion |
| LR4 | Seepage (through- and under-); landside stability; erosion |
| LR5 | Seepage (through- and under-); landside stability; erosion |
| LR6 | Seepage (through- and under-); erosion; landside stability |
| LR7 | Seepage (through- and under-); landside stability; erosion |
| SL1 | Landside stability; through-seepage |
| SL2 | Landside stability; through-seepage |
| SR1 | Landside stability; through-seepage |

FIGURES

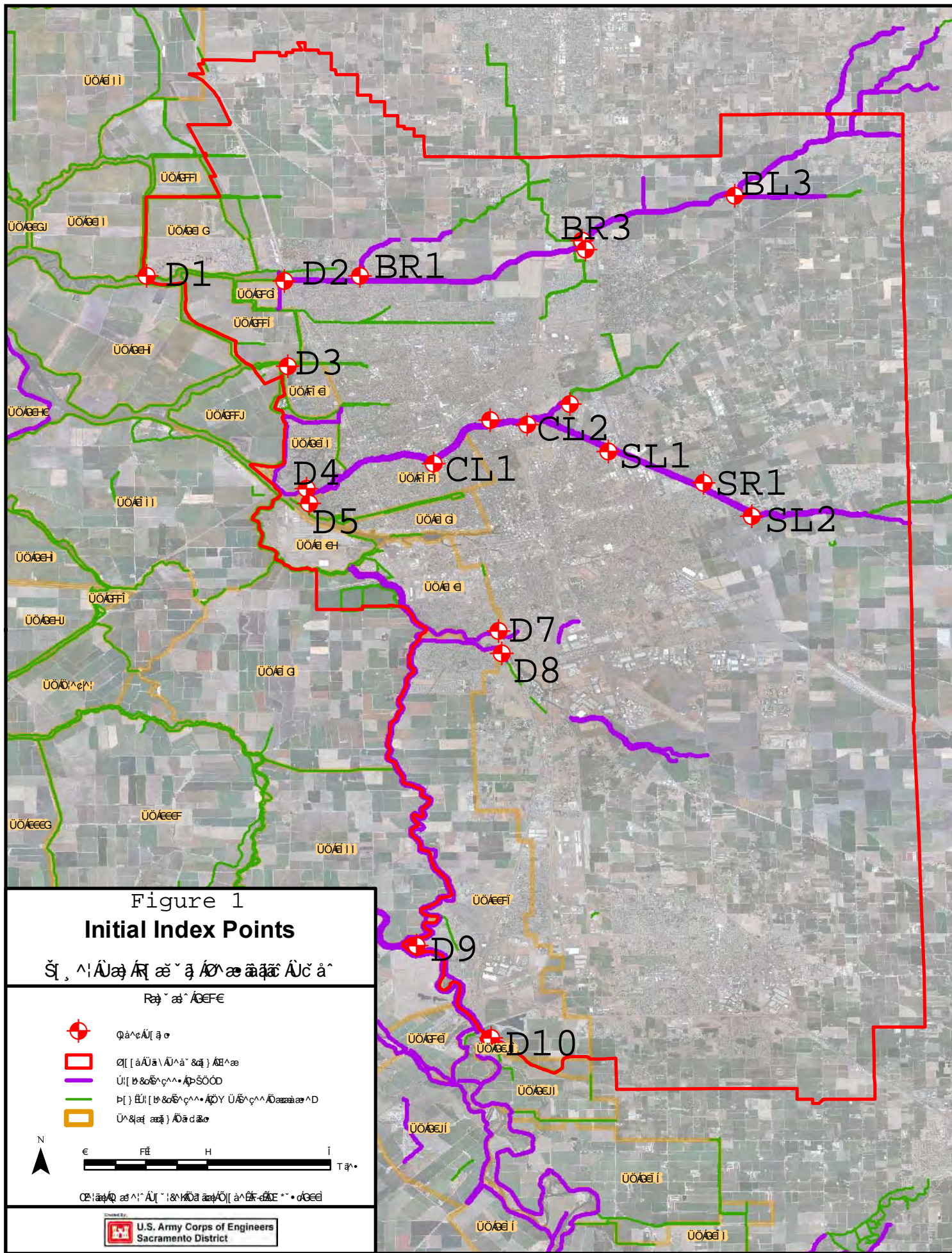


Figure 1
Initial Index Points

Figure 1 shows the initial index points for the study area. The points are labeled D1 through D10, BR1 through BR3, CL1 through CL2, SL1 through SL2, and SR1. The points are located along the boundary of the study area, which is outlined in red. The points are also located along the boundary of the floodplain, which is outlined in purple. The points are also located along the boundary of the floodplain, which is outlined in green. The points are also located along the boundary of the floodplain, which is outlined in orange.

Figure 1 shows the initial index points for the study area. The points are labeled D1 through D10, BR1 through BR3, CL1 through CL2, SL1 through SL2, and SR1. The points are located along the boundary of the study area, which is outlined in red. The points are also located along the boundary of the floodplain, which is outlined in purple. The points are also located along the boundary of the floodplain, which is outlined in green. The points are also located along the boundary of the floodplain, which is outlined in orange.



Point of interest



Boundary of the study area



Boundary of the floodplain



Boundary of the floodplain



Boundary of the floodplain

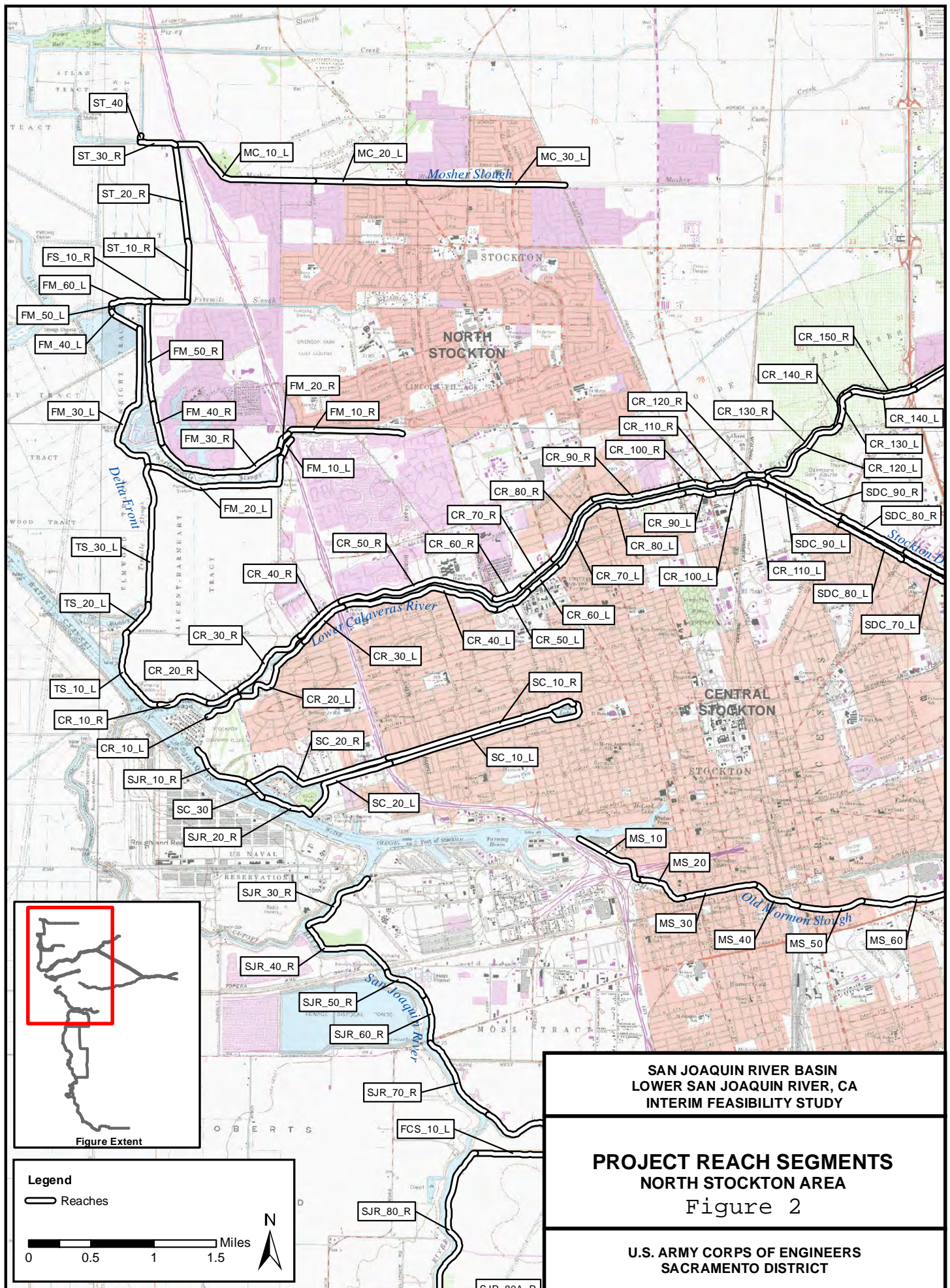


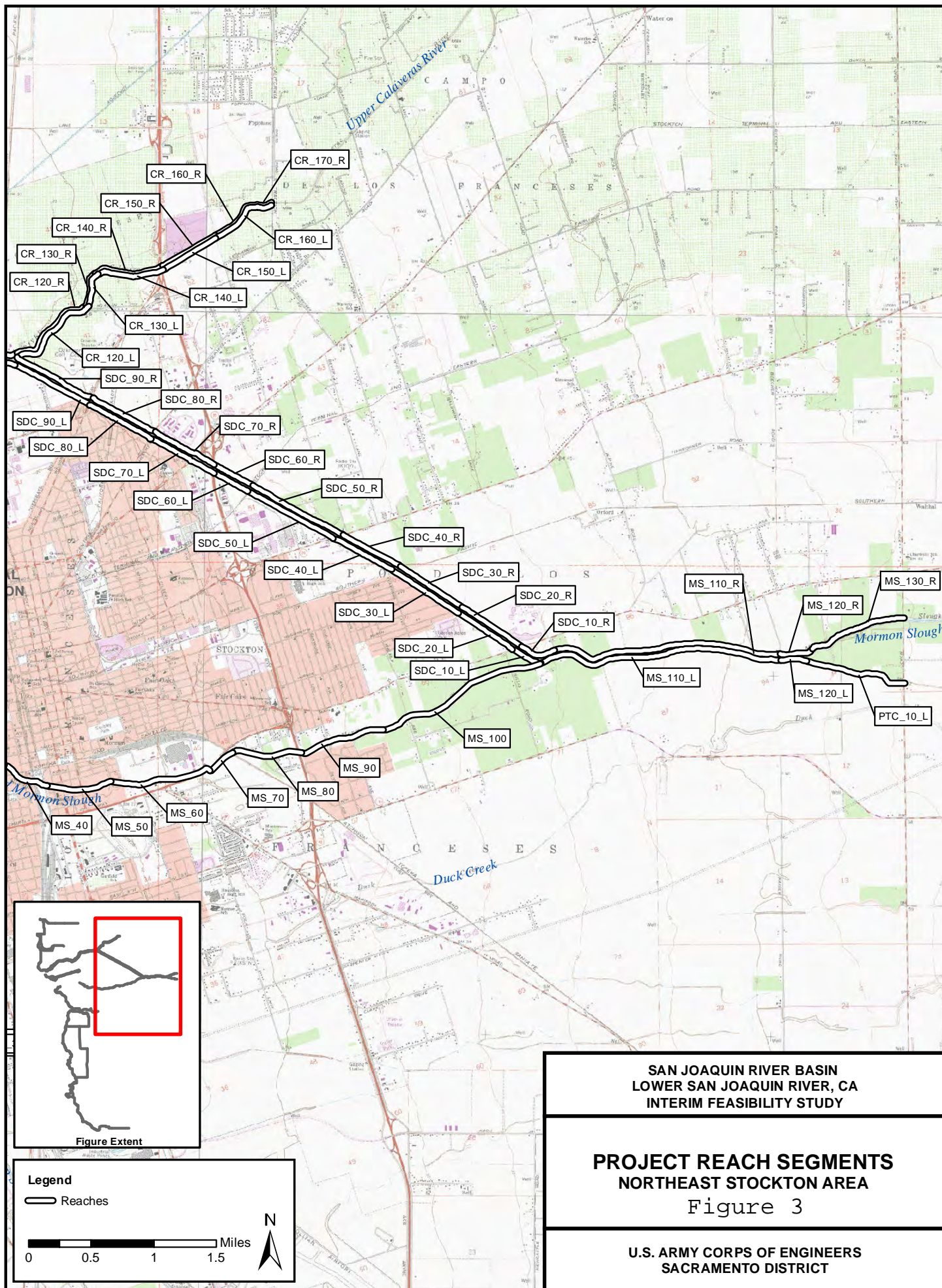
Scale bar: 0 to 1000 feet, 0 to 1 mile.

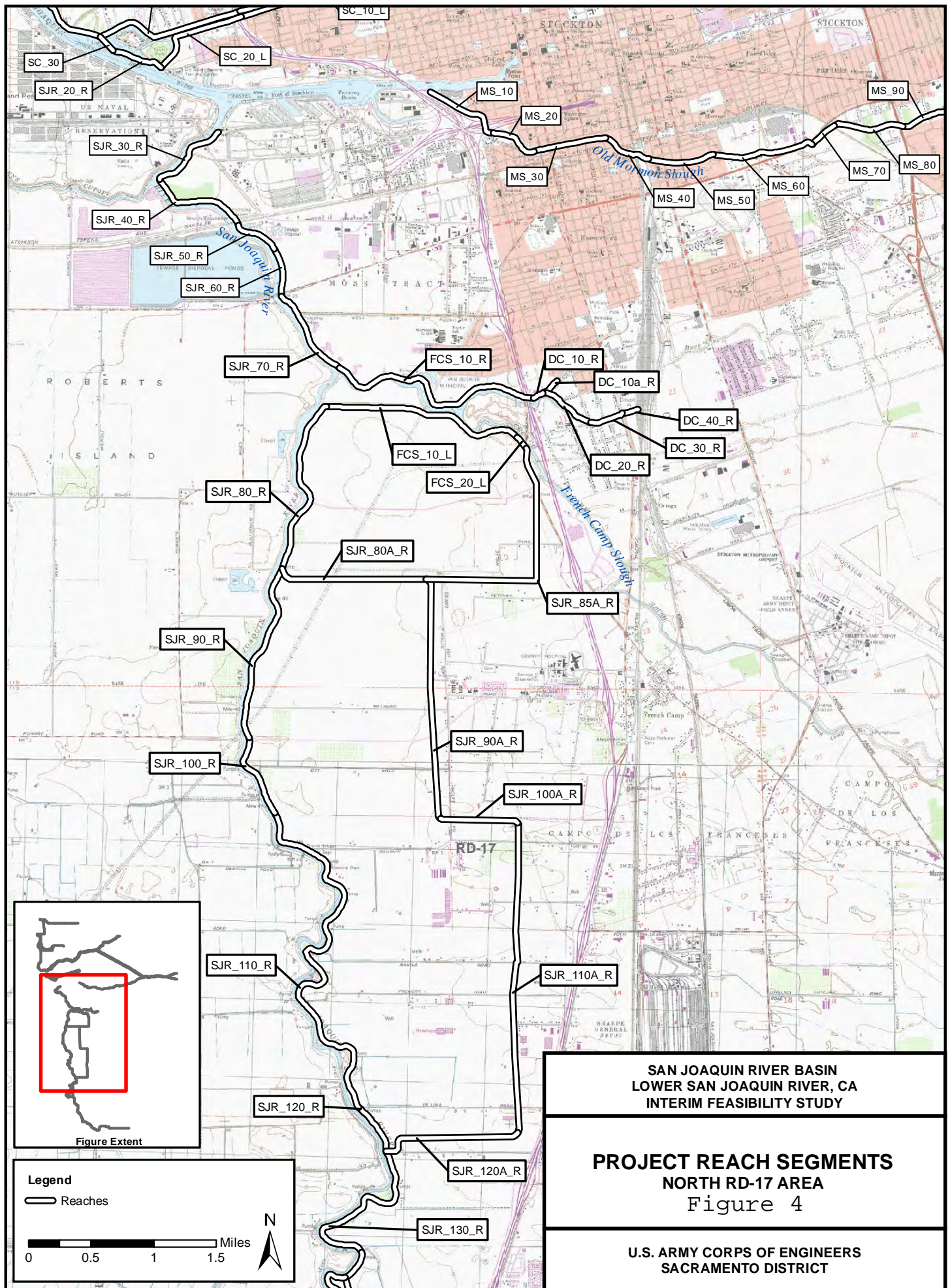
Figure 1 shows the initial index points for the study area. The points are labeled D1 through D10, BR1 through BR3, CL1 through CL2, SL1 through SL2, and SR1. The points are located along the boundary of the study area, which is outlined in red. The points are also located along the boundary of the floodplain, which is outlined in purple. The points are also located along the boundary of the floodplain, which is outlined in green. The points are also located along the boundary of the floodplain, which is outlined in orange.

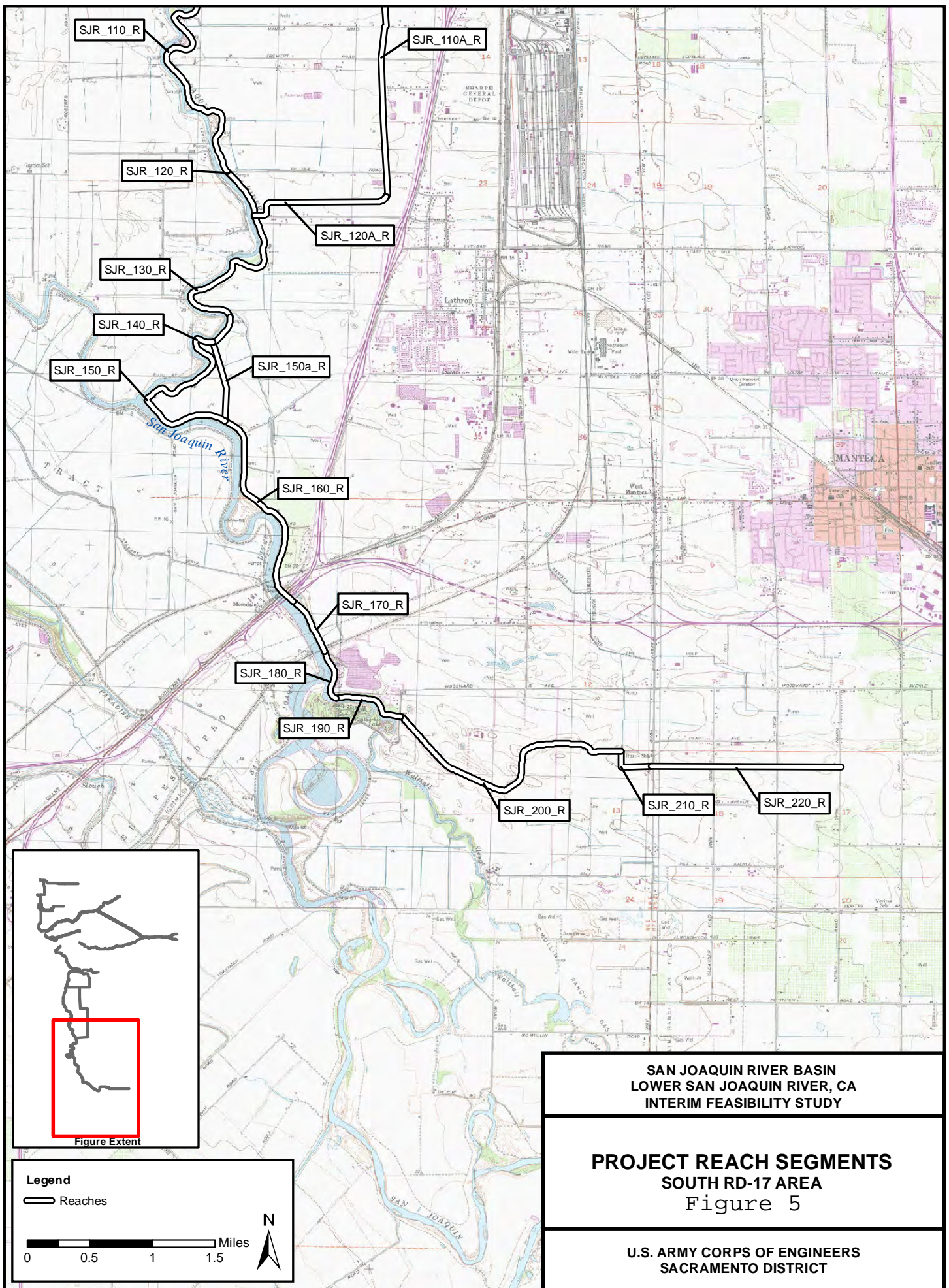


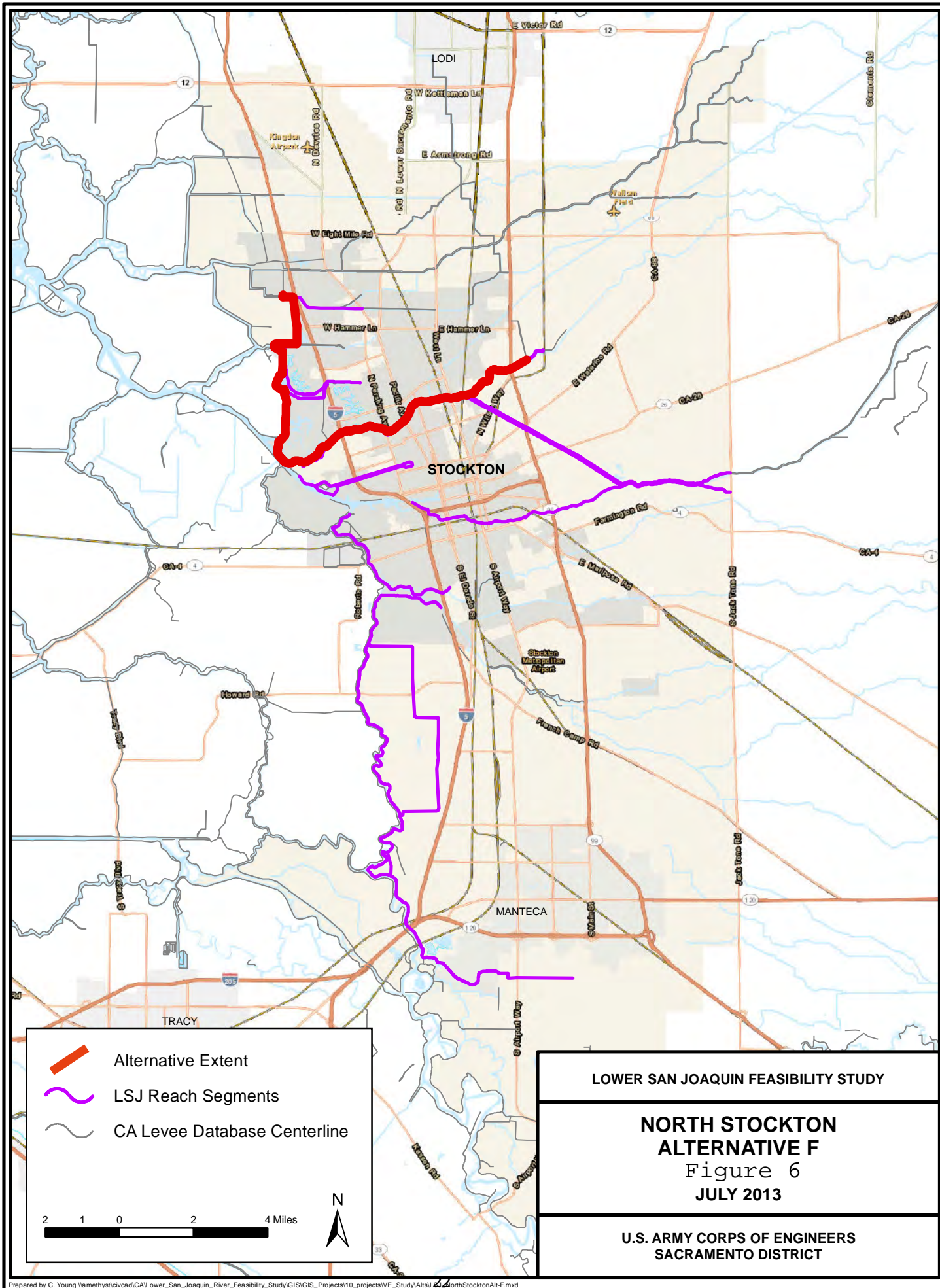
U.S. Army Corps of Engineers
Sacramento District

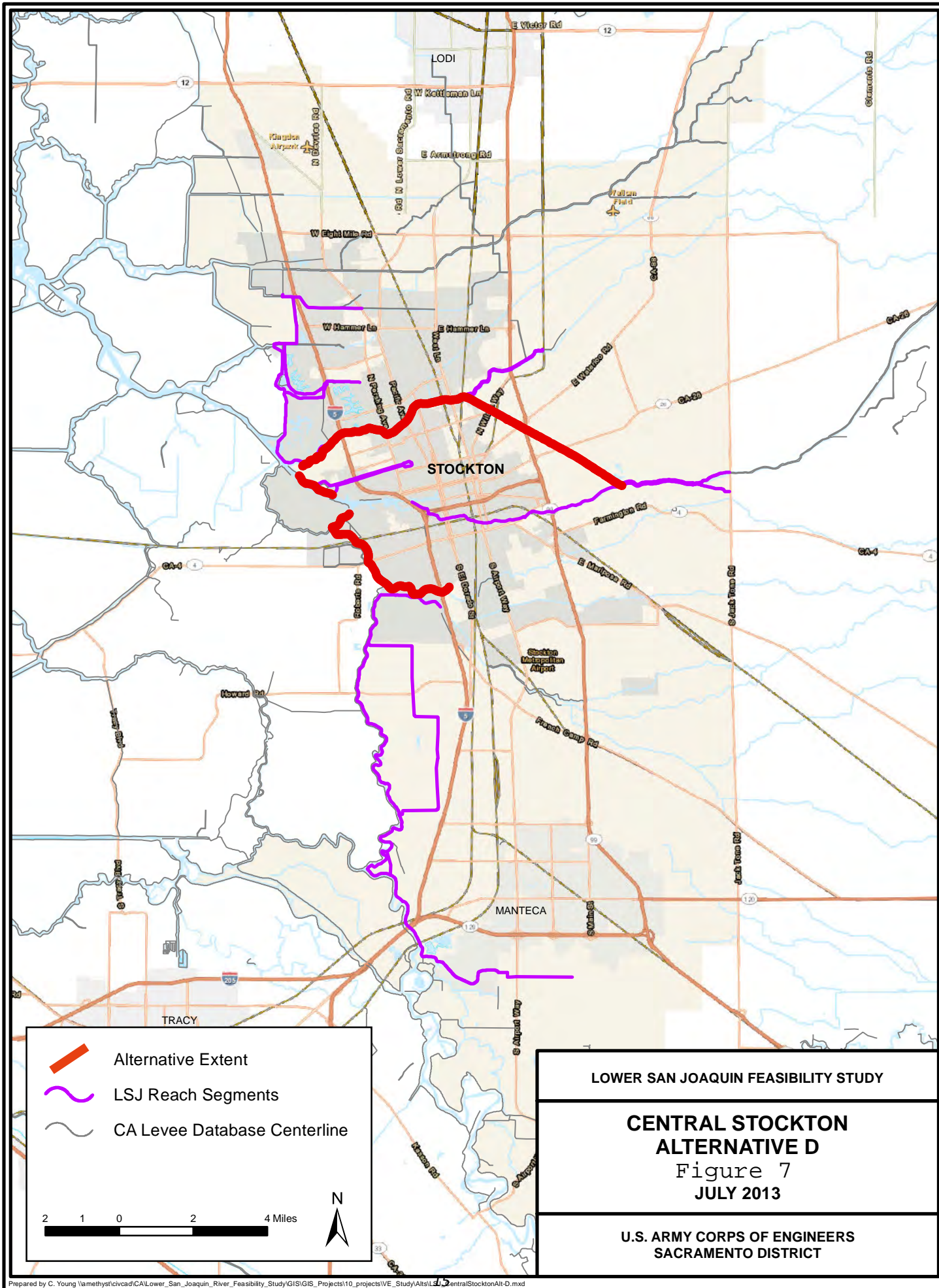


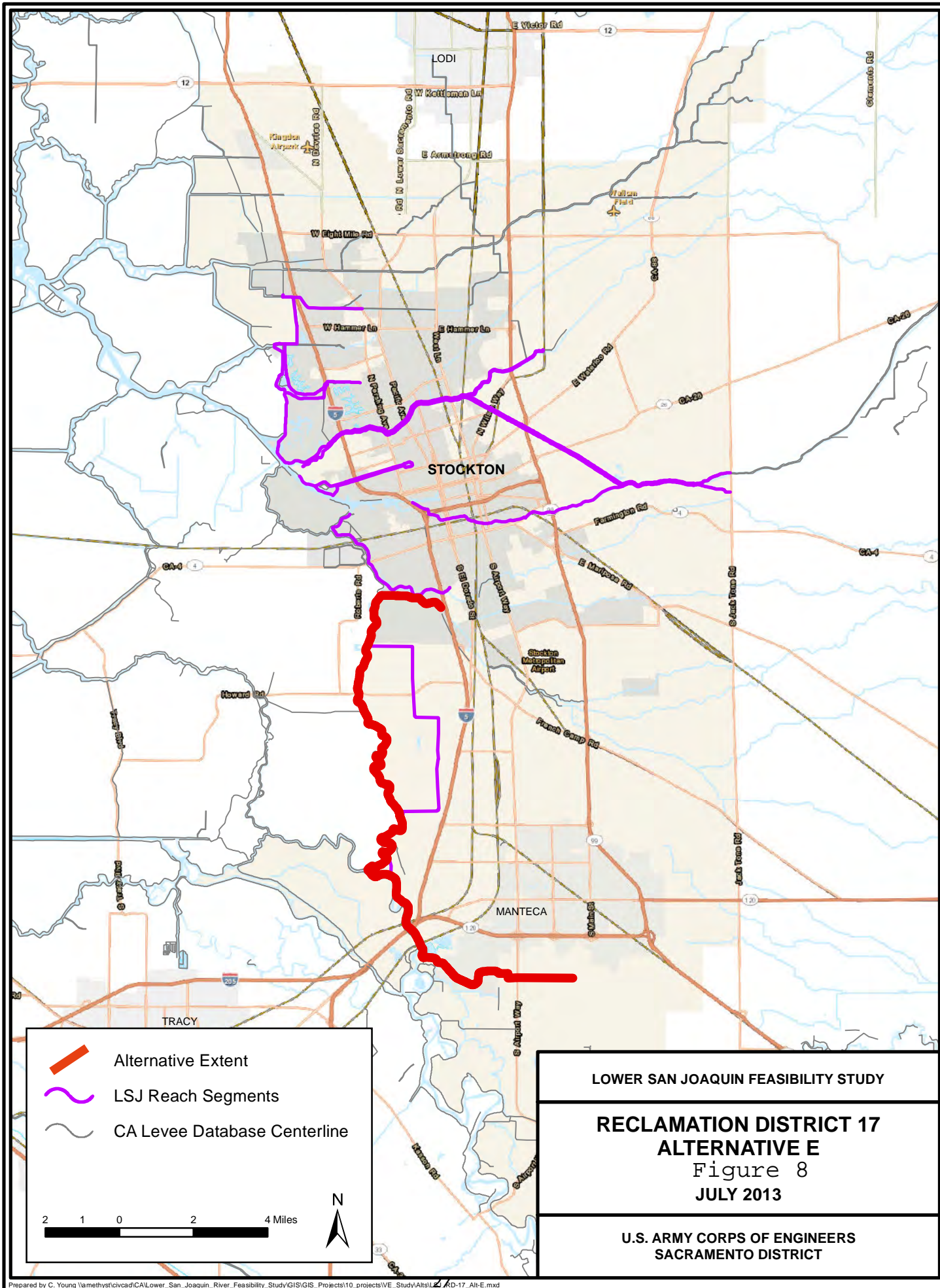


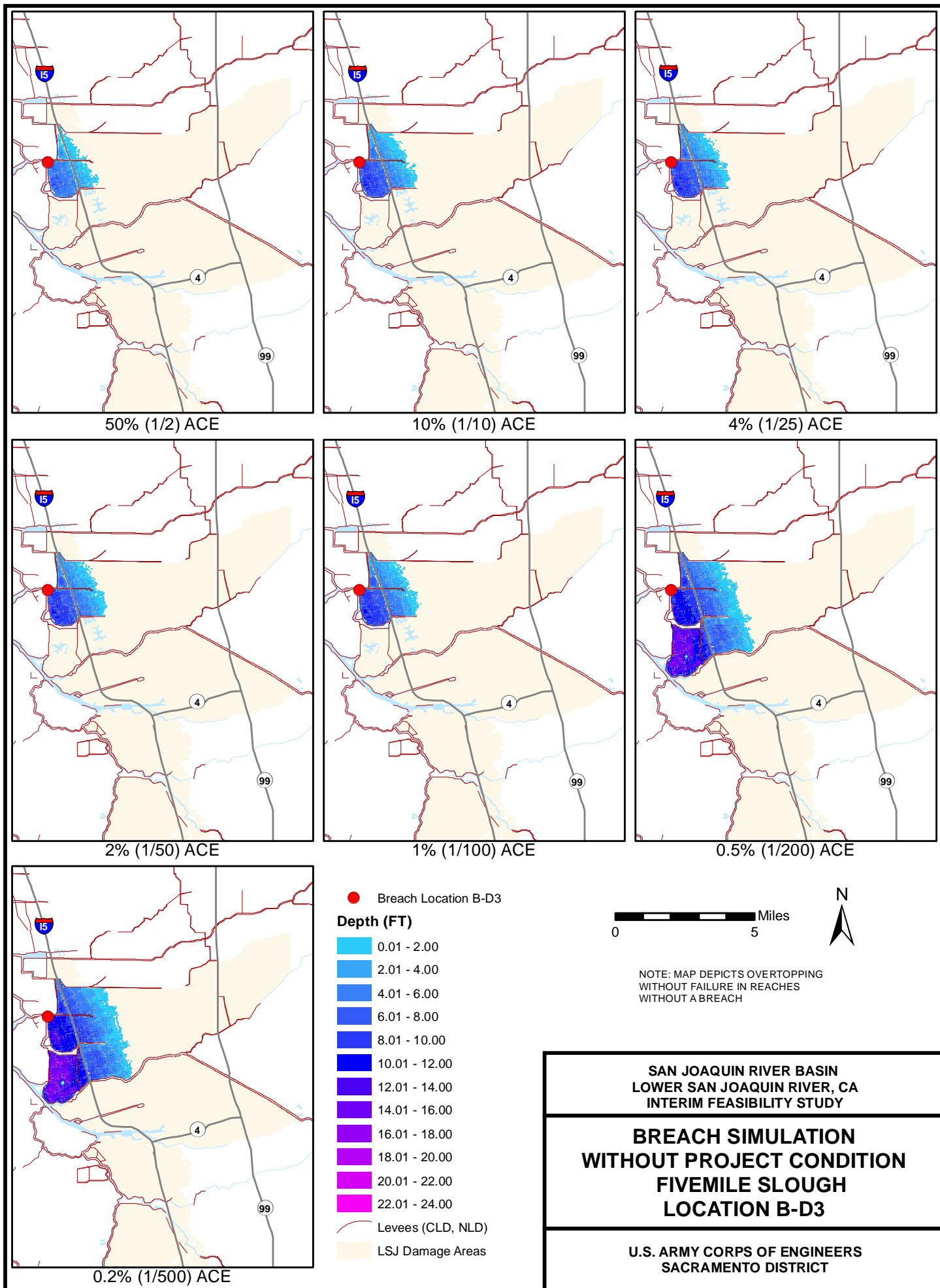


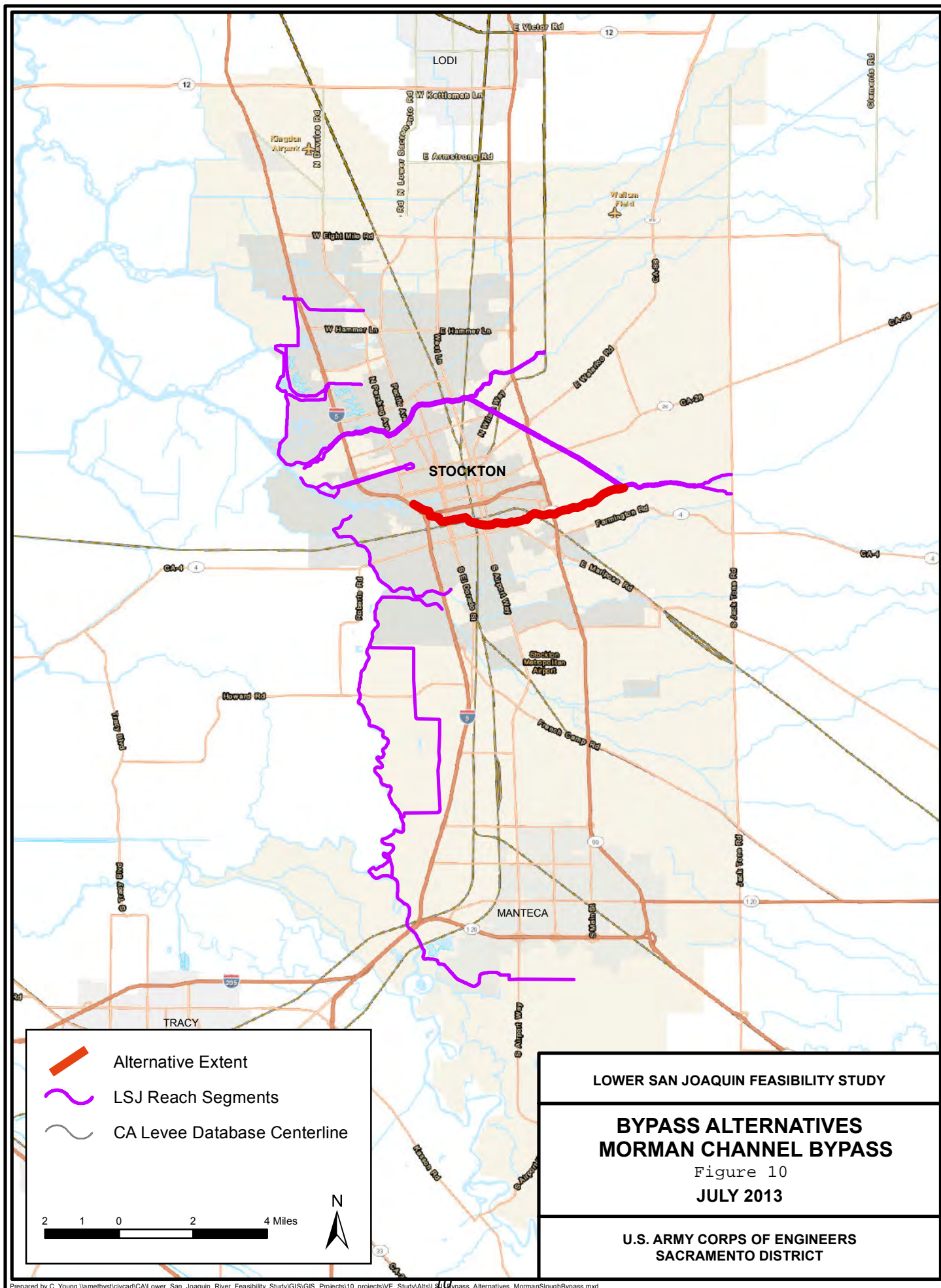


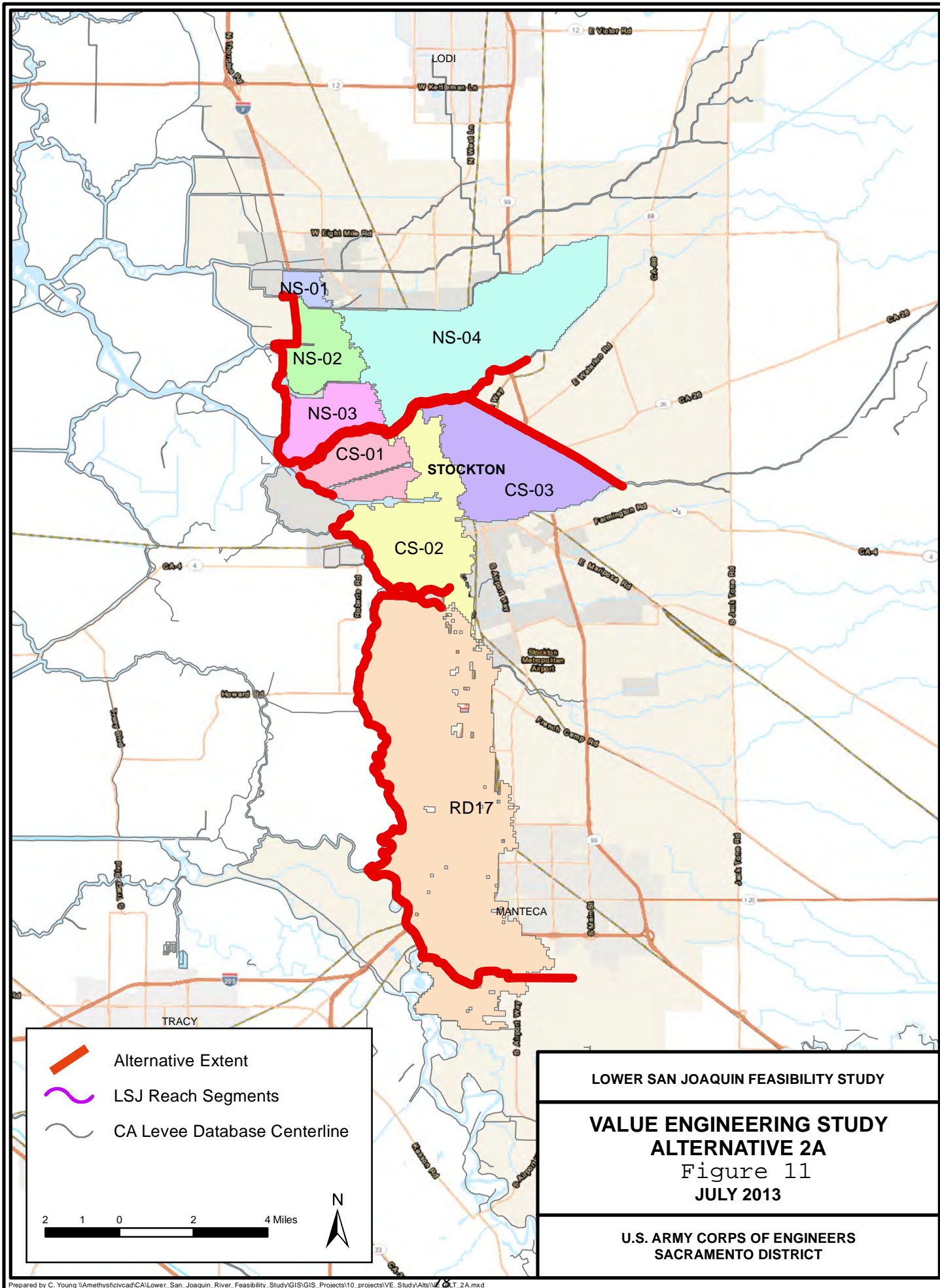


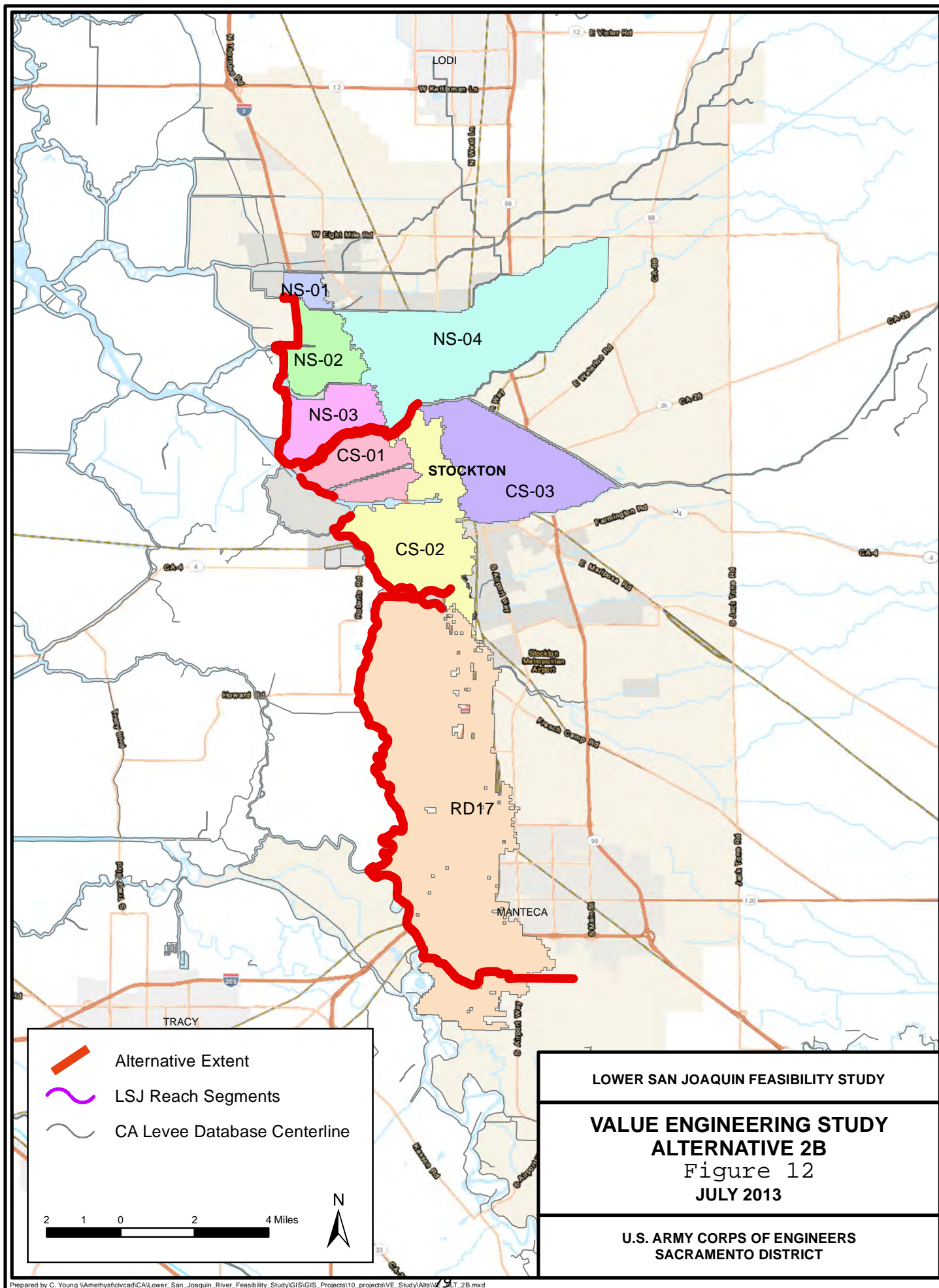


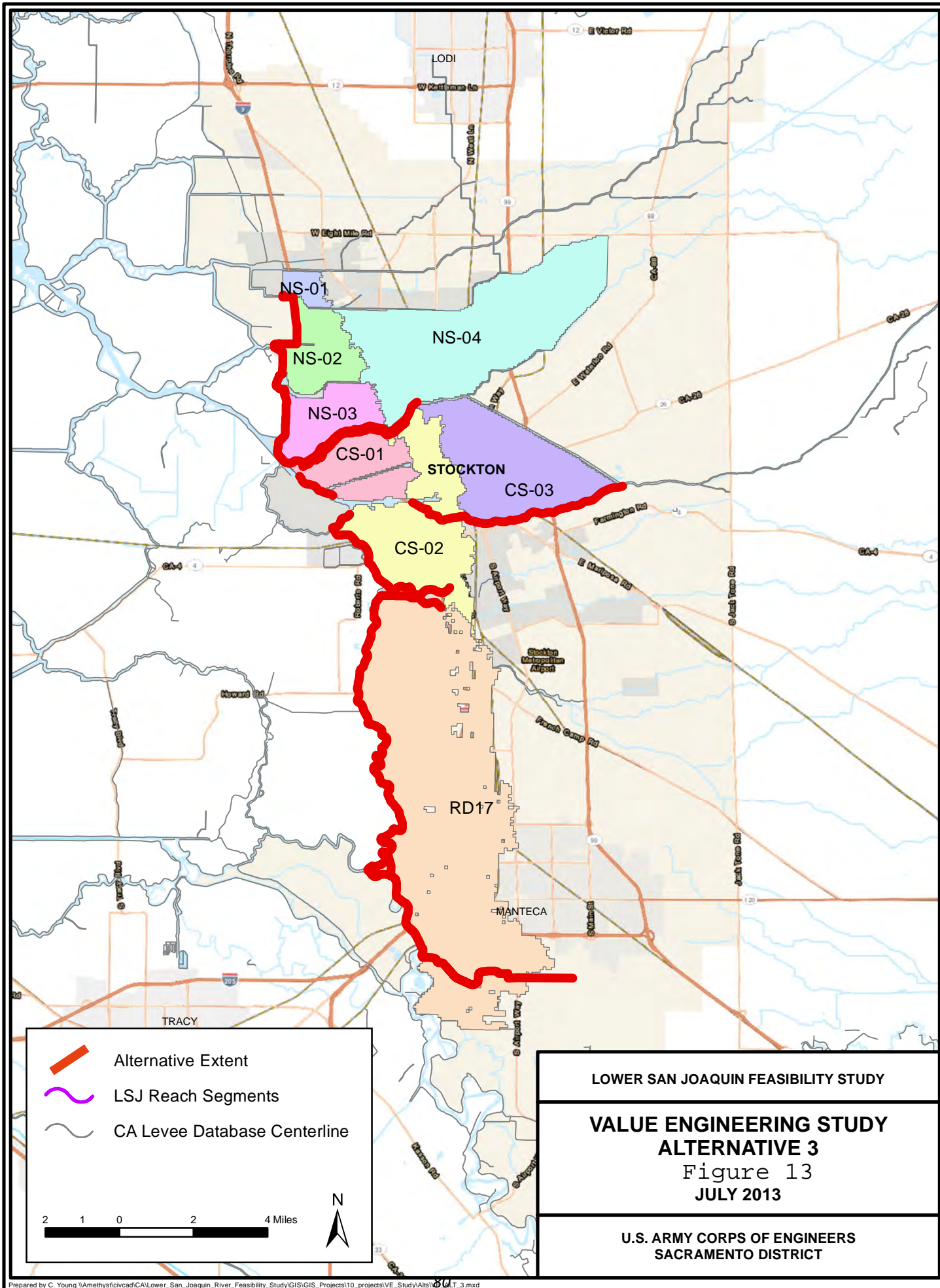


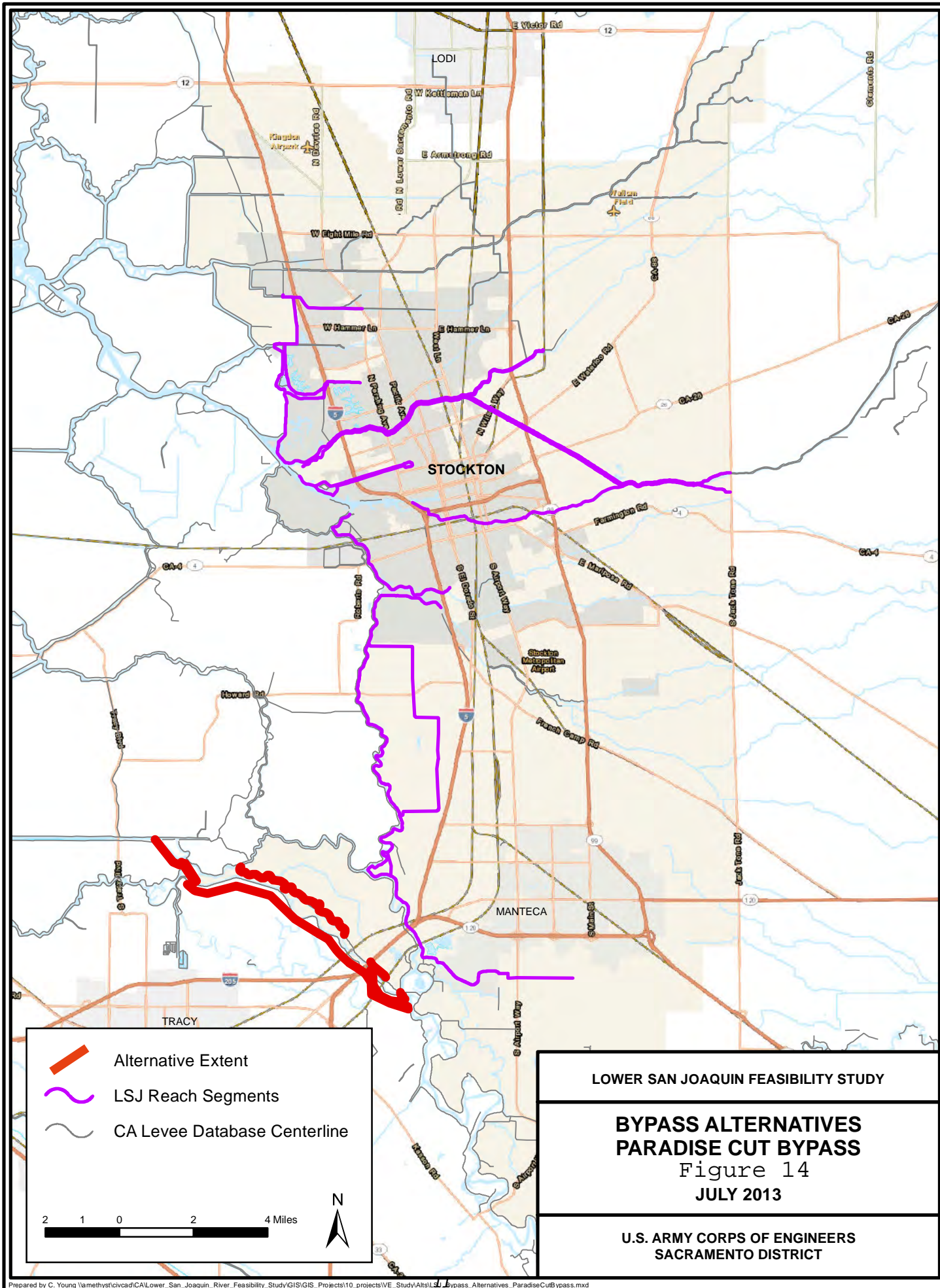












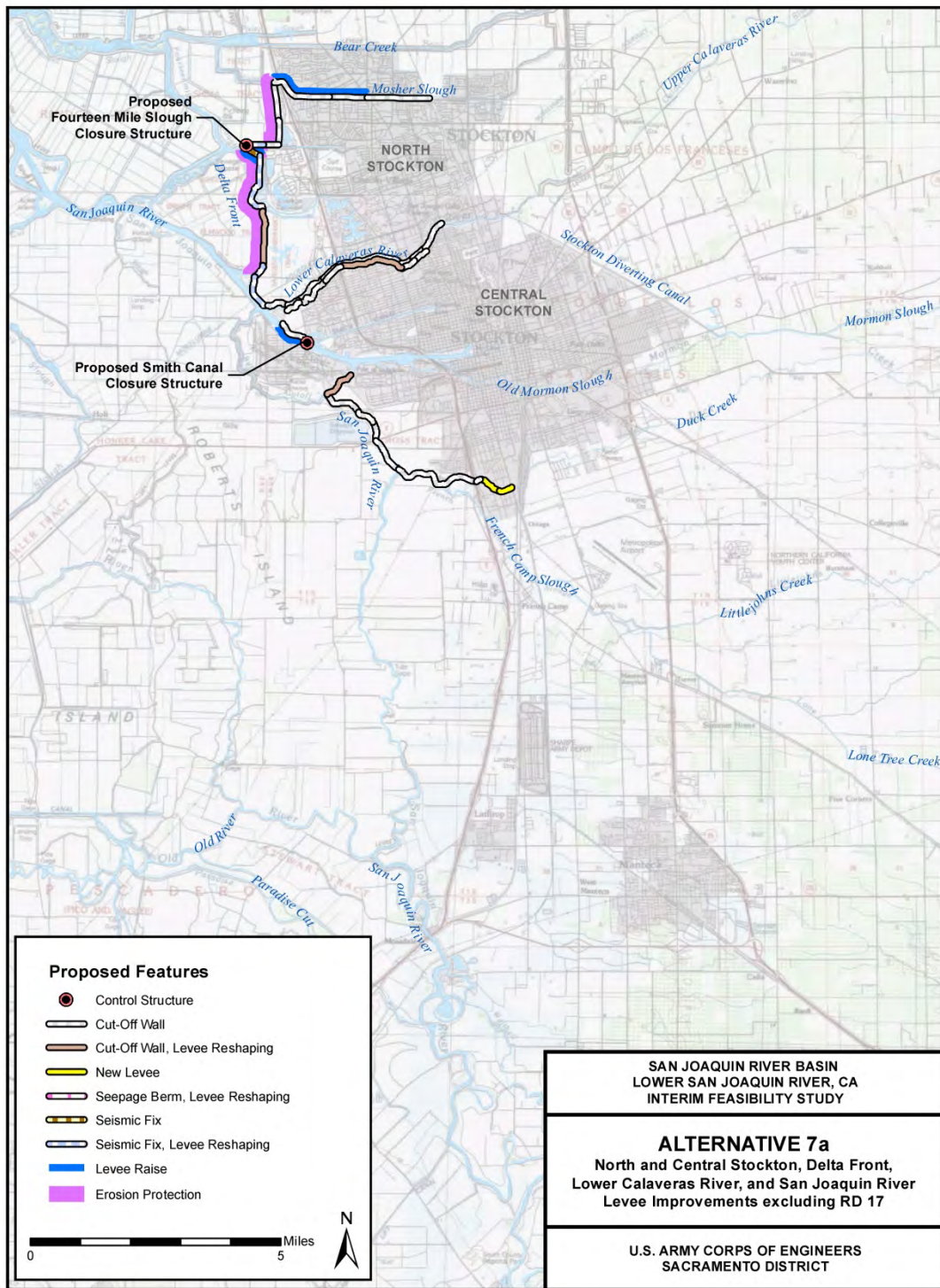


Figure 15

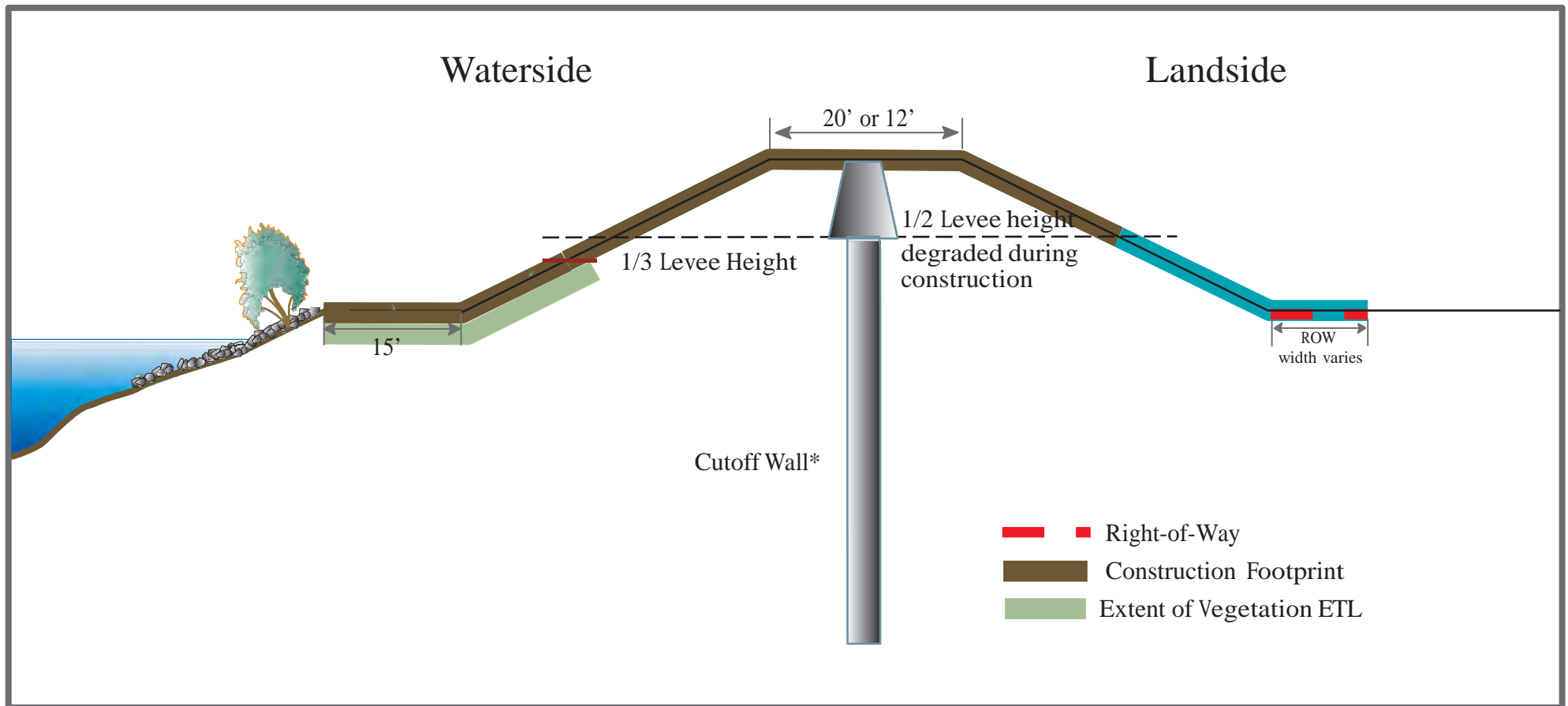


Figure 16. Lower San Joaquin Feasibility Study - Typical Cross Section Repair for the Tentatively Selected Plan

* ~ 22 miles of levee repair would resemble that shown with cutoff wall for the TSP

COST ENGINEERING

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 7a, N Stockton, Fix B**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **325,811,013**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--|---------------------------------|----------------|--------------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 79,569,213 | 28.72% | \$ 22,851,571 | \$ 102,420,783.86 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 33,941,435 | 20.94% | \$ 7,106,318 | \$ 41,047,753.09 |
| 2 | 11 01 LEVEES | Earthwork | \$ 57,240,029 | 21.04% | \$ 12,046,053 | \$ 69,286,082.12 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 26,171,400 | 20.71% | \$ 5,420,188 | \$ 31,591,588.17 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ 130,949,900 | 25.76% | \$ 33,732,220 | \$ 164,682,120.36 |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 8,213,271 | 45.52% | \$ 3,739,091 | \$ 11,952,362.11 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 15,598,000 | 26.45% | \$ 4,126,008 | \$ 19,724,007.90 |
| 12 | | Remaining Construction Items | \$ 53,696,978 | 16.5% 25.82% | \$ 13,865,527 | \$ 67,562,505.50 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 48,871,652 | 28.87% | \$ 14,109,845 | \$ 62,981,496.99 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 32,581,101 | 24.56% | \$ 8,003,541 | \$ 40,584,641.93 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|----|------------------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 79,569,213 | 28.72% | \$ | 22,851,571 \$ 102,420,783.86 |
| | Total Construction Estimate | \$ | 325,811,013 | 24.56% | \$ | 80,035,406 \$ 405,846,419 |
| | Total Planning, Engineering & Design | \$ | 48,871,652 | 28.87% | \$ | 14,109,845 \$ 62,981,497 |
| | Total Construction Management | \$ | 32,581,101 | 24.56% | \$ | 8,003,541 \$ 40,584,642 |
| | Total | \$ | 486,832,979 | 25.08% | \$ | 125,000,363 \$ 611,833,342 |

Abbreviated Risk Analysis

Lower San Joaquin River Feasibility Study, Alt 7a, C Stockton, Fixes B & C plus Duck Cr

Project (less than \$40M):

Project Development Stage: **Feasibility (Alternatives)**

Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ 108,302,310

| CWWBS | Feature of Work | Contract Cost | % Contingency | \$ Contingency | Total |
|-------|-----------------|---------------|---------------|----------------|-------|
|-------|-----------------|---------------|---------------|----------------|-------|

| | | | | | | |
|----|--|---------------------------------|---------------|--------|--------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 22,577,987 | 26.45% | \$ 5,972,949 | \$ 28,550,936.14 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 6,104,019 | 23.31% | \$ 1,422,752 | \$ 7,526,770.55 |
| 2 | 11 01 LEVEES | Earthwork | \$ 38,085,725 | 11.28% | \$ 4,294,201 | \$ 42,379,925.95 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 22,525,000 | 20.71% | \$ 4,665,006 | \$ 27,190,006.02 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ - | 0.00% | \$ - | \$ - |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 13,400 | 15.94% | \$ 2,136 | \$ 15,535.72 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 14,187,000 | 26.45% | \$ 3,752,768 | \$ 17,939,767.92 |
| 12 | | Remaining Construction Items | \$ 27,387,166 | 25.3% | \$ 7,071,860 | \$ 34,459,026.13 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 16,245,346 | 28.87% | \$ 4,690,231 | \$ 20,935,577.11 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 10,830,231 | 19.58% | \$ 2,120,872 | \$ 12,951,103.23 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|---------------|------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 22,577,987 | 26.45% | \$ 5,972,949 | \$ 28,550,936.14 |
| | Total Construction Estimate | \$ | 108,302,310 | 19.58% | \$ 21,208,723 | \$ 129,511,032 |
| | Total Planning, Engineering & Design | \$ | 16,245,346 | 28.87% | \$ 4,690,231 | \$ 20,935,577 |
| | Total Construction Management | \$ | 10,830,231 | 19.58% | \$ 2,120,872 | \$ 12,951,103 |
| | Total | \$ | 157,955,874 | 20.70% | \$ 33,992,775 | \$ 191,948,649 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 7b, N Stockton, Fix B**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **325,798,700**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--|---------------------------------|----------------|--------------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 78,909,904 | 28.72% | \$ 22,662,267 | \$ 101,572,170.76 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 33,941,435 | 20.94% | \$ 7,106,318 | \$ 41,047,753.09 |
| 2 | 11 01 LEVEES | Earthwork | \$ 57,240,029 | 21.04% | \$ 12,046,053 | \$ 69,286,082.12 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 26,171,400 | 20.71% | \$ 5,420,188 | \$ 31,591,588.17 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ 130,949,900 | 25.76% | \$ 33,732,220 | \$ 164,682,120.36 |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 8,213,271 | 45.52% | \$ 3,739,091 | \$ 11,952,362.11 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 15,598,000 | 26.45% | \$ 4,126,008 | \$ 19,724,007.90 |
| 12 | | Remaining Construction Items | \$ 53,684,665 | 16.5% 25.82% | \$ 13,862,348 | \$ 67,547,013.06 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 48,869,805 | 28.87% | \$ 14,109,312 | \$ 62,979,116.80 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 32,579,870 | 24.56% | \$ 8,003,223 | \$ 40,583,092.68 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|----|------------------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 78,909,904 | 28.72% | \$ | 22,662,267 \$ 101,572,170.76 |
| | Total Construction Estimate | \$ | 325,798,700 | 24.56% | \$ | 80,032,227 \$ 405,830,927 |
| | Total Planning, Engineering & Design | \$ | 48,869,805 | 28.87% | \$ | 14,109,312 \$ 62,979,117 |
| | Total Construction Management | \$ | 32,579,870 | 24.56% | \$ | 8,003,223 \$ 40,583,093 |
| | Total | \$ | 486,158,279 | 25.08% | \$ | 124,807,028 \$ 610,965,307 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 7b, C Stockton, Fixes B & C**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **102,187,062**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--|---------------------------------|---------------|--------|--------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 21,622,368 | 26.52% | \$ 5,734,874 | \$ 27,357,242.69 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 5,810,984 | 23.31% | \$ 1,354,450 | \$ 7,165,434.02 |
| 2 | 11 01 LEVEES | Earthwork | \$ 35,034,483 | 11.28% | \$ 3,950,171 | \$ 38,984,654.08 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 20,998,600 | 20.71% | \$ 4,348,883 | \$ 25,347,483.26 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ - | 0.00% | \$ - | \$ - |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 13,400 | 15.94% | \$ 2,136 | \$ 15,535.72 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 14,187,000 | 26.45% | \$ 3,752,768 | \$ 17,939,767.92 |
| 12 | | Remaining Construction Items | \$ 26,142,595 | 25.6% | \$ 6,750,489 | \$ 32,893,083.54 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 15,328,059 | 28.87% | \$ 4,425,399 | \$ 19,753,457.86 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 10,218,706 | 19.73% | \$ 2,015,890 | \$ 12,234,595.85 * |

| Totals | | | | | | | | |
|--------|--------------------------------------|----|-------------|--------|----|------------|----|---------------|
| | Real Estate | \$ | 21,622,368 | 26.52% | \$ | 5,734,874 | \$ | 27,357,242.69 |
| | Total Construction Estimate | \$ | 102,187,062 | 19.73% | \$ | 20,158,897 | \$ | 122,345,959 |
| | Total Planning, Engineering & Design | \$ | 15,328,059 | 28.87% | \$ | 4,425,399 | \$ | 19,753,458 |
| | Total Construction Management | \$ | 10,218,706 | 19.73% | \$ | 2,015,890 | \$ | 12,234,596 |
| | Total | \$ | 149,356,195 | 20.82% | \$ | 32,335,060 | \$ | 181,691,255 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 7b, RD 17**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **257,527,099**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--------------------------------------|---------------------------------|----------------|-------------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 14,442,728 | 23.96% | \$ 3,460,609 | \$ 17,903,336.54 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 11,298,265 | 24.28% | \$ 2,742,785 | \$ 14,041,050.50 |
| 2 | 11 01 LEVEES | Earthwork | \$ 140,674,376 | 20.39% | \$ 28,688,582 | \$ 169,362,958.24 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 43,491,800 | 19.52% | \$ 8,490,634 | \$ 51,982,433.97 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ - | 0.00% | \$ - | \$ - |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 6,946,167 | 10.62% | \$ 737,954 | \$ 7,684,120.72 |
| 12 | | Remaining Construction Items | \$ 55,116,491 | 21.4% 7.00% | \$ 3,858,154 | \$ 58,974,645.87 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 38,629,065 | 7.00% | \$ 2,704,035 | \$ 41,333,099.47 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 25,752,710 | 17.29% | \$ 4,451,811 | \$ 30,204,520.93 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|----|---------------|
| Totals | | | | | | |
| | Real Estate | \$ | 14,442,728 | 23.96% | \$ | 17,903,336.54 |
| | Total Construction Estimate | \$ | 257,527,099 | 17.29% | \$ | 302,045,209 |
| | Total Planning, Engineering & Design | \$ | 38,629,065 | 7.00% | \$ | 41,333,099 |
| | Total Construction Management | \$ | 25,752,710 | 17.29% | \$ | 30,204,521 |
| | Total | \$ | 336,351,602 | 16.05% | \$ | 391,486,166 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 8a, N Stockton, Fix F**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **350,564,416**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--|---------------------------------|----------------|--------------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 88,700,915 | 28.08% | \$ 24,905,073 | \$ 113,605,988.01 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 36,818,361 | 20.94% | \$ 7,708,661 | \$ 44,527,021.38 |
| 2 | 11 01 LEVEES | Earthwork | \$ 67,277,633 | 21.04% | \$ 14,158,447 | \$ 81,436,080.33 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 30,178,200 | 20.71% | \$ 6,250,010 | \$ 36,428,210.42 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ 130,949,900 | 25.76% | \$ 33,732,220 | \$ 164,682,120.36 |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 8,213,271 | 45.52% | \$ 3,739,091 | \$ 11,952,362.11 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 15,598,000 | 26.45% | \$ 4,126,008 | \$ 19,724,007.90 |
| 12 | | Remaining Construction Items | \$ 61,529,051 | 17.6% 25.82% | \$ 15,887,910 | \$ 77,416,960.66 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 52,584,662 | 28.87% | \$ 15,181,837 | \$ 67,766,499.08 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 35,056,442 | 24.42% | \$ 8,560,235 | \$ 43,616,676.32 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|----|------------------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 88,700,915 | 28.08% | \$ | 24,905,073 \$ 113,605,988.01 |
| | Total Construction Estimate | \$ | 350,564,416 | 24.42% | \$ | 85,602,347 \$ 436,166,763 |
| | Total Planning, Engineering & Design | \$ | 52,584,662 | 28.87% | \$ | 15,181,837 \$ 67,766,499 |
| | Total Construction Management | \$ | 35,056,442 | 24.42% | \$ | 8,560,235 \$ 43,616,676 |
| | Total | \$ | 526,906,435 | 24.95% | \$ | 134,249,491 \$ 661,155,927 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 8a, C Stockton, Fix D + Duck Cr**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **158,945,400**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--|---------------------------------|---------------|--------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 27,465,085 | 25.59% | \$ 7,027,527 | \$ 34,492,611.99 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 8,381,698 | 23.31% | \$ 1,953,643 | \$ 10,335,340.80 |
| 2 | 11 01 LEVEES | Earthwork | \$ 63,754,473 | 13.31% | \$ 8,486,525 | \$ 72,240,998.29 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 32,383,000 | 20.71% | \$ 6,706,632 | \$ 39,089,632.19 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ - | 0.00% | \$ - | \$ - |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 13,400 | 15.94% | \$ 2,136 | \$ 15,535.72 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 14,187,000 | 26.45% | \$ 3,752,768 | \$ 17,939,767.92 |
| 12 | | Remaining Construction Items | \$ 40,225,830 | 25.3% | \$ 10,387,034 | \$ 50,612,863.96 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 23,841,810 | 28.87% | \$ 6,883,423 | \$ 30,725,232.91 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 15,894,540 | 19.69% | \$ 3,128,874 | \$ 19,023,413.89 * |

| Totals | | | | | | | |
|--------|--------------------------------------|----|-------------|--------|----|------------|------------------|
| | Real Estate | \$ | 27,465,085 | 25.59% | \$ | 7,027,527 | \$ 34,492,611.99 |
| | Total Construction Estimate | \$ | 158,945,400 | 19.69% | \$ | 31,288,738 | \$ 190,234,139 |
| | Total Planning, Engineering & Design | \$ | 23,841,810 | 28.87% | \$ | 6,883,423 | \$ 30,725,233 |
| | Total Construction Management | \$ | 15,894,540 | 19.69% | \$ | 3,128,874 | \$ 19,023,414 |
| | Total | \$ | 226,146,836 | 20.79% | \$ | 48,328,562 | \$ 274,475,398 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 8b, N Stockton, Fix F**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **350,546,087**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--|---------------------------------|----------------|--------------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 87,719,448 | 28.07% | \$ 24,623,520 | \$ 112,342,968.27 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 36,818,361 | 20.94% | \$ 7,708,661 | \$ 44,527,021.38 |
| 2 | 11 01 LEVEES | Earthwork | \$ 67,277,633 | 21.04% | \$ 14,158,447 | \$ 81,436,080.33 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 30,178,200 | 20.71% | \$ 6,250,010 | \$ 36,428,210.42 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ 130,949,900 | 25.76% | \$ 33,732,220 | \$ 164,682,120.36 |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 8,213,271 | 45.52% | \$ 3,739,091 | \$ 11,952,362.11 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 15,598,000 | 26.45% | \$ 4,126,008 | \$ 19,724,007.90 |
| 12 | | Remaining Construction Items | \$ 61,510,722 | 17.5% 25.82% | \$ 15,883,177 | \$ 77,393,898.78 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 52,581,913 | 28.87% | \$ 15,181,043 | \$ 67,762,955.96 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 35,054,609 | 24.42% | \$ 8,559,761 | \$ 43,614,370.13 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|----------------|-------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 87,719,448 | 28.07% | \$ 24,623,520 | \$ 112,342,968.27 |
| | Total Construction Estimate | \$ | 350,546,087 | 24.42% | \$ 85,597,614 | \$ 436,143,701 |
| | Total Planning, Engineering & Design | \$ | 52,581,913 | 28.87% | \$ 15,181,043 | \$ 67,762,956 |
| | Total Construction Management | \$ | 35,054,609 | 24.42% | \$ 8,559,761 | \$ 43,614,370 |
| | Total | \$ | 525,902,057 | 24.95% | \$ 133,961,938 | \$ 659,863,996 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 8b, C Stockton, Fix D**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **152,543,543**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--|---------------------------------|---------------|--------|--------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 26,149,697 | 25.57% | \$ 6,686,584 | \$ 32,836,280.57 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 8,119,996 | 23.31% | \$ 1,892,645 | \$ 10,012,640.71 |
| 2 | 11 01 LEVEES | Earthwork | \$ 60,707,783 | 11.28% | \$ 6,844,860 | \$ 67,552,642.38 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 30,856,600 | 20.71% | \$ 6,390,509 | \$ 37,247,109.43 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ - | 0.00% | \$ - | \$ - |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 13,400 | 15.94% | \$ 2,136 | \$ 15,535.72 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 14,187,000 | 26.45% | \$ 3,752,768 | \$ 17,939,767.92 |
| 12 | | Remaining Construction Items | \$ 38,658,764 | 25.3% | \$ 9,982,390 | \$ 48,641,153.40 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 22,881,531 | 28.87% | \$ 6,606,179 | \$ 29,487,709.99 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 15,254,354 | 18.92% | \$ 2,886,531 | \$ 18,140,884.95 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|----|----------------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 26,149,697 | 25.57% | \$ | 6,686,584 \$ 32,836,280.57 |
| | Total Construction Estimate | \$ | 152,543,543 | 18.92% | \$ | 28,865,307 \$ 181,408,850 |
| | Total Planning, Engineering & Design | \$ | 22,881,531 | 28.87% | \$ | 6,606,179 \$ 29,487,710 |
| | Total Construction Management | \$ | 15,254,354 | 18.92% | \$ | 2,886,531 \$ 18,140,885 |
| | Total | \$ | 216,829,125 | 20.12% | \$ | 45,044,600 \$ 261,873,725 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 8b, RD 17**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **257,536,663**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--------------------------------------|---------------------------------|----------------|-------------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 14,954,855 | 24.05% | \$ 3,596,296 | \$ 18,551,151.16 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 11,298,265 | 24.28% | \$ 2,742,785 | \$ 14,041,050.50 |
| 2 | 11 01 LEVEES | Earthwork | \$ 140,674,376 | 20.39% | \$ 28,688,582 | \$ 169,362,958.24 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 43,491,800 | 19.52% | \$ 8,490,634 | \$ 51,982,433.97 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ - | 0.00% | \$ - | \$ - |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 6,946,167 | 10.62% | \$ 737,954 | \$ 7,684,120.72 |
| 12 | | Remaining Construction Items | \$ 55,126,055 | 21.4% 7.00% | \$ 3,858,824 | \$ 58,984,879.35 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 38,630,500 | 7.00% | \$ 2,704,135 | \$ 41,334,634.49 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 25,753,666 | 17.29% | \$ 4,451,878 | \$ 30,205,544.28 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|---------------|------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 14,954,855 | 24.05% | \$ 3,596,296 | \$ 18,551,151.16 |
| | Total Construction Estimate | \$ | 257,536,663 | 17.29% | \$ 44,518,779 | \$ 302,055,443 |
| | Total Planning, Engineering & Design | \$ | 38,630,500 | 7.00% | \$ 2,704,135 | \$ 41,334,634 |
| | Total Construction Management | \$ | 25,753,666 | 17.29% | \$ 4,451,878 | \$ 30,205,544 |
| | Total | \$ | 336,875,684 | 16.05% | \$ 55,271,088 | \$ 392,146,773 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 9a, N Stockton, Fix B**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **325,813,366**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--|---------------------------------|----------------|--------------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 79,695,198 | 28.71% | \$ 22,883,002 | \$ 102,578,200.44 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 33,941,435 | 20.94% | \$ 7,106,318 | \$ 41,047,753.09 |
| 2 | 11 01 LEVEES | Earthwork | \$ 57,240,029 | 21.04% | \$ 12,046,053 | \$ 69,286,082.12 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 26,171,400 | 20.71% | \$ 5,420,188 | \$ 31,591,588.17 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ 130,949,900 | 25.76% | \$ 33,732,220 | \$ 164,682,120.36 |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 8,213,271 | 45.52% | \$ 3,739,091 | \$ 11,952,362.11 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 15,598,000 | 26.45% | \$ 4,126,008 | \$ 19,724,007.90 |
| 12 | | Remaining Construction Items | \$ 53,699,331 | 16.5% 25.82% | \$ 13,866,135 | \$ 67,565,466.08 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 48,872,005 | 28.87% | \$ 14,109,947 | \$ 62,981,951.84 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 32,581,337 | 24.56% | \$ 8,003,601 | \$ 40,584,937.98 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|----|------------------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 79,695,198 | 28.71% | \$ | 22,883,002 \$ 102,578,200.44 |
| | Total Construction Estimate | \$ | 325,813,366 | 24.56% | \$ | 80,036,014 \$ 405,849,380 |
| | Total Planning, Engineering & Design | \$ | 48,872,005 | 28.87% | \$ | 14,109,947 \$ 62,981,952 |
| | Total Construction Management | \$ | 32,581,337 | 24.56% | \$ | 8,003,601 \$ 40,584,938 |
| | Total | \$ | 486,961,906 | 25.08% | \$ | 125,032,564 \$ 611,994,470 |

Abbreviated Risk Analysis

**Lower San Joaquin River Feasibility Study, Alt 9a, C Stockton, Fixes B & C
plus Duck Creek & Mormon Channel**

Project (less than \$40M):

Project Development Stage: **Feasibility (Alternatives)**

Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **124,760,655**

| CWWBS | Feature of Work | Contract Cost | % Contingency | \$ Contingency | Total |
|-------|-----------------|---------------|---------------|----------------|-------|
|-------|-----------------|---------------|---------------|----------------|-------|

| | | | | | | |
|----|--|---------------------------------|---------------|--------|--------------|------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 25,485,082 | 25.14% | \$ 6,407,596 | \$ 31,892,677.56 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 7,028,675 | 23.31% | \$ 1,638,275 | \$ 8,666,949.85 |
| 2 | 11 01 LEVEES | Earthwork | \$ 40,284,842 | 11.28% | \$ 4,542,154 | \$ 44,826,995.47 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 22,525,000 | 20.71% | \$ 4,665,006 | \$ 27,190,006.02 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ - | 0.00% | \$ - | \$ - |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 13,400 | 15.94% | \$ 2,136 | \$ 15,535.72 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structures | \$ 24,370,000 | 30.93% | \$ 7,538,473 | \$ 31,908,472.66 |
| 12 | | Remaining Construction Items | \$ 30,538,738 | 24.5% | \$ 7,885,652 | \$ 38,424,390.41 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 18,714,098 | 28.87% | \$ 5,402,990 | \$ 24,117,087.75 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 12,476,065 | 21.06% | \$ 2,627,170 | \$ 15,103,235.01 |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|---------------|------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 25,485,082 | 25.14% | \$ 6,407,596 | \$ 31,892,677.56 |
| | Total Construction Estimate | \$ | 124,760,655 | 21.06% | \$ 26,271,695 | \$ 151,032,350 |
| | Total Planning, Engineering & Design | \$ | 18,714,098 | 28.87% | \$ 5,402,990 | \$ 24,117,088 |
| | Total Construction Management | \$ | 12,476,065 | 21.06% | \$ 2,627,170 | \$ 15,103,235 |
| | Total | \$ | 181,435,900 | 22.00% | \$ 40,709,451 | \$ 222,145,350 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 9b, N Stockton, Fix B**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **325,798,986**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--|---------------------------------|----------------|--------------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 78,925,237 | 28.71% | \$ 22,663,033 | \$ 101,588,270.59 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 33,941,435 | 20.94% | \$ 7,106,318 | \$ 41,047,753.09 |
| 2 | 11 01 LEVEES | Earthwork | \$ 57,240,029 | 21.04% | \$ 12,046,053 | \$ 69,286,082.12 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 26,171,400 | 20.71% | \$ 5,420,188 | \$ 31,591,588.17 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ 130,949,900 | 25.76% | \$ 33,732,220 | \$ 164,682,120.36 |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 8,213,271 | 45.52% | \$ 3,739,091 | \$ 11,952,362.11 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structure | \$ 15,598,000 | 26.45% | \$ 4,126,008 | \$ 19,724,007.90 |
| 12 | | Remaining Construction Items | \$ 53,684,951 | 16.5% 25.82% | \$ 13,862,422 | \$ 67,547,372.91 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 48,869,848 | 28.87% | \$ 14,109,324 | \$ 62,979,172.09 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 32,579,899 | 24.56% | \$ 8,003,230 | \$ 40,583,128.67 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|----|------------------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 78,925,237 | 28.71% | \$ | 22,663,033 \$ 101,588,270.59 |
| | Total Construction Estimate | \$ | 325,798,986 | 24.56% | \$ | 80,032,301 \$ 405,831,287 |
| | Total Planning, Engineering & Design | \$ | 48,869,848 | 28.87% | \$ | 14,109,324 \$ 62,979,172 |
| | Total Construction Management | \$ | 32,579,899 | 24.56% | \$ | 8,003,230 \$ 40,583,129 |
| | Total | \$ | 486,173,970 | 25.08% | \$ | 124,807,888 \$ 610,981,858 |

Abbreviated Risk Analysis

Lower San Joaquin River Feasibility Study, Alt 9b, C Stockton, Fixes B & C plus Mormon Channel

Project (less than \$40M):

Project Development Stage: **Feasibility (Alternatives)**

Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **118,334,371**

| CWWBS | Feature of Work | Contract Cost | % Contingency | \$ Contingency | Total |
|-------|-----------------|---------------|---------------|----------------|-------|
|-------|-----------------|---------------|---------------|----------------|-------|

| | | | | | | |
|----|--|---------------------------------|---------------|--------|--------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 24,468,872 | 25.15% | \$ 6,152,924 | \$ 30,621,796.06 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 6,736,134 | 23.31% | \$ 1,570,088 | \$ 8,306,222.06 |
| 2 | 11 01 LEVEES | Earthwork | \$ 37,239,483 | 11.28% | \$ 4,198,787 | \$ 41,438,269.92 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 20,998,600 | 20.71% | \$ 4,348,883 | \$ 25,347,483.26 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ - | 0.00% | \$ - | \$ - |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 13,400 | 15.94% | \$ 2,136 | \$ 15,535.72 |
| 6 | 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES | Control Structures | \$ 24,370,000 | 30.93% | \$ 7,538,473 | \$ 31,908,472.66 |
| 12 | | Remaining Construction Items | \$ 28,976,754 | 24.5% | \$ 7,482,320 | \$ 36,459,073.47 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 17,750,156 | 28.87% | \$ 5,124,688 | \$ 22,874,843.12 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 11,833,437 | 21.25% | \$ 2,514,069 | \$ 14,347,505.71 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|---------------|------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 24,468,872 | 25.15% | \$ 6,152,924 | \$ 30,621,796.06 |
| | Total Construction Estimate | \$ | 118,334,371 | 21.25% | \$ 25,140,686 | \$ 143,475,057 |
| | Total Planning, Engineering & Design | \$ | 17,750,156 | 28.87% | \$ 5,124,688 | \$ 22,874,843 |
| | Total Construction Management | \$ | 11,833,437 | 21.25% | \$ 2,514,069 | \$ 14,347,506 |
| | Total | \$ | 172,386,836 | 22.16% | \$ 38,932,366 | \$ 211,319,202 |

Abbreviated Risk Analysis

Project (less than \$40M): **Lower San Joaquin River Feasibility Study, Alt 9b, RD 17**
 Project Development Stage: **Feasibility (Alternatives)**
 Risk Category: **Moderate Risk: Typical Project or Possible Life Safety**

Total Construction Contract Cost = \$ **257,527,888**

| <u>CWWBS</u> | <u>Feature of Work</u> | <u>Contract Cost</u> | <u>% Contingency</u> | <u>\$ Contingency</u> | <u>Total</u> |
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|
|--------------|------------------------|----------------------|----------------------|-----------------------|--------------|

| | | | | | | |
|----|--------------------------------------|---------------------------------|----------------|-------------|---------------|--------------------|
| | 01 LANDS AND DAMAGES | Real Estate | \$ 14,484,970 | 23.91% | \$ 3,462,721 | \$ 17,947,691.35 |
| 1 | 06 FISH AND WILDLIFE FACILITIES | Fish & Wildlife Facilities | \$ 11,298,265 | 24.28% | \$ 2,742,785 | \$ 14,041,050.50 |
| 2 | 11 01 LEVEES | Earthwork | \$ 140,674,376 | 20.39% | \$ 28,688,582 | \$ 169,362,958.24 |
| 3 | 11 01 LEVEES | Cutoff Walls | \$ 43,491,800 | 19.52% | \$ 8,490,634 | \$ 51,982,433.97 |
| 4 | 11 01 LEVEES | DSM (Seismic) | \$ - | 0.00% | \$ - | \$ - |
| 5 | 11 01 LEVEES | Slope/Erosion Protection | \$ 6,946,167 | 10.62% | \$ 737,954 | \$ 7,684,120.72 |
| 12 | | Remaining Construction Items | \$ 55,117,280 | 21.4% 7.00% | \$ 3,858,210 | \$ 58,975,490.10 |
| 13 | 30 PLANNING, ENGINEERING, AND DESIGN | Planning, Engineering, & Design | \$ 38,629,183 | 7.00% | \$ 2,704,043 | \$ 41,333,226.10 |
| 14 | 31 CONSTRUCTION MANAGEMENT | Construction Management | \$ 25,752,789 | 17.29% | \$ 4,451,817 | \$ 30,204,605.35 * |

| | | | | | | |
|---------------|--------------------------------------|----|-------------|--------|----|----------------------------|
| Totals | | | | | | |
| | Real Estate | \$ | 14,484,970 | 23.91% | \$ | 3,462,721 \$ 17,947,691.35 |
| | Total Construction Estimate | \$ | 257,527,888 | 17.29% | \$ | 44,518,165 \$ 302,046,054 |
| | Total Planning, Engineering & Design | \$ | 38,629,183 | 7.00% | \$ | 2,704,043 \$ 41,333,226 |
| | Total Construction Management | \$ | 25,752,789 | 17.29% | \$ | 4,451,817 \$ 30,204,605 |
| | Total | \$ | 336,394,831 | 16.05% | \$ | 55,136,746 \$ 391,531,576 |

****** TOTAL PROJECT COST SUMMARY ******

Printed:6/12/2014

Page 1 of 3

PROJECT: Lower San Joaquin River Feas Study - Alt LS-7A
PROJECT NO: 105785
LOCATION: Stockton CA

DISTRICT: SPD South Pacific Division
POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|-------------|----------------|--|---------------|---------------|----------------|---|---|---------------|---------------|---------------|
| | | | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Spent Thru: 1-Oct-14 (\$K) | | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| ALL | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 24% | \$0 | - | \$0 | \$0 | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$40,045 | \$9,775 | 24% | \$49,820 | 0.0% | \$40,045 | \$9,775 | \$49,820 | \$0 | | \$40,045 | \$9,775 | \$49,820 |
| 11 | LEVEES & FLOODWALLS | \$335,898 | \$80,860 | 24% | \$416,758 | 0.0% | \$335,898 | \$80,860 | \$416,758 | \$0 | | \$335,898 | \$80,860 | \$416,758 |
| 15 | FLOODWAY CONTROL & DIVERSION STR | \$29,785 | \$6,846 | 23% | \$36,631 | 0.0% | \$29,785 | \$6,846 | \$36,631 | \$0 | | \$29,785 | \$6,846 | \$36,631 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$11,767 | \$2,824 | 24% | \$14,592 | 0.0% | \$11,767 | \$2,824 | \$14,592 | \$0 | | \$11,767 | \$2,824 | \$14,592 |
| CONSTRUCTION ESTIMATE TOTALS: | | \$417,496 | \$100,305 | | \$517,801 | 0.0% | \$417,496 | \$100,305 | \$517,801 | \$0 | | \$417,496 | \$100,305 | \$517,801 |
| 01 | LANDS AND DAMAGES | \$102,147 | \$28,824 | 28% | \$130,971 | 0.0% | \$102,147 | \$28,824 | \$130,971 | \$0 | | \$102,147 | \$28,824 | \$130,971 |
| 02 | RELOCATIONS | \$16,618 | \$3,805 | 23% | \$20,423 | 0.0% | \$16,618 | \$3,805 | \$20,423 | \$0 | | \$16,618 | \$3,805 | \$20,423 |
| 30 | RELOCATIIONS - PED | \$2,493 | \$571 | 23% | \$3,063 | 0.0% | \$2,493 | \$571 | \$3,063 | \$0 | | \$2,493 | \$571 | \$3,063 |
| 31 | RELOCATIONS - CM | \$1,662 | \$381 | 23% | \$2,042 | 0.0% | \$1,662 | \$381 | \$2,042 | \$0 | | \$1,662 | \$381 | \$2,042 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN | \$62,624 | \$15,046 | 24% | \$77,670 | 0.0% | \$62,624 | \$15,046 | \$77,670 | \$0 | | \$62,624 | \$15,046 | \$77,670 |
| 31 | CONSTRUCTION MANAGEMENT | \$41,749 | \$10,030 | 24% | \$51,779 | 0.0% | \$41,749 | \$10,030 | \$51,779 | \$0 | | \$41,749 | \$10,030 | \$51,779 |
| PROJECT COST TOTALS: | | \$644,788 | \$158,962 | 25% | \$803,750 | | \$644,788 | \$158,962 | \$803,750 | \$0 | | \$644,788 | \$158,962 | \$803,750 |

CHIEF, COST ENGINEERING, Jeremiah Frost

PROJECT MANAGER, Joana Savinon

CHIEF, REAL ESTATE, Sharon Caine

CHIEF, ENGINEERING, Rick Poeppelman

ESTIMATED TOTAL PROJECT COST: \$803,750,000

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 2 of 3

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-7A
 LOCATION: Stockton CA
 This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division PREPARED: 6/12/2014
 POC: CHIEF, COST ENGINEERING, Jeremiah Frost

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--|-----------|-------------------|-----------|---|-----------|------------------|-----------|---|------|-----------|-----------|-----------|
| | | Estimate Prepared: Effective Price Level: | | 6/9/2014 41913 | | Program Year (Budget EC): Effective Price Level Date: | | 2015 1 OCT 14 | | | | | | |
| | | RISK BASED | | | | | | | | | | | | |
| WBS | Civil Works | COST | CNTG | CNTG | TOTAL | ESC | COST | CNTG | TOTAL | Mid-Point | ESC | COST | CNTG | FULL |
| NUMBER | Feature & Sub-Feature Description | (\$K) | (\$K) | (%) | (\$K) | (%) | (\$K) | (\$K) | (\$K) | Date | (%) | (\$K) | (\$K) | (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | N Stockton, Fix B | | | | | | | | | | | | | |
| | COMPOSITE INDEX (WEIGHTED AVERAGE) | | \$0 | 25% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$33,941 | \$8,513 | 25% | \$42,454 | 0.0% | \$33,941 | \$8,513 | \$42,454 | 2014Q1 | 0.0% | \$33,941 | \$8,513 | \$42,454 |
| 11 | LEVEES & FLOODWALLS | \$259,009 | \$64,959 | 25% | \$323,969 | 0.0% | \$259,009 | \$64,959 | \$323,969 | 2014Q1 | 0.0% | \$259,009 | \$64,959 | \$323,969 |
| 15 | FLOODWAY CONTROL & DIVERSION STR | \$15,598 | \$3,912 | 25% | \$19,510 | 0.0% | \$15,598 | \$3,912 | \$19,510 | 2014Q1 | 0.0% | \$15,598 | \$3,912 | \$19,510 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$8,885 | \$2,228 | 25% | \$11,113 | 0.0% | \$8,885 | \$2,228 | \$11,113 | 2014Q1 | 0.0% | \$8,885 | \$2,228 | \$11,113 |
| | | | \$0 | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$317,433 | \$79,612 | 25% | \$397,045 | | \$317,433 | \$79,612 | \$397,045 | | | \$317,433 | \$79,612 | \$397,045 |
| 01 | LANDS AND DAMAGES | \$79,569 | \$22,852 | 29% | \$102,421 | 0.0% | \$79,569 | \$22,852 | \$102,421 | 2014Q1 | 0.0% | \$79,569 | \$22,852 | \$102,421 |
| 02 | RELOCATIONS | \$8,378 | \$2,101 | 25% | \$10,479 | 0.0% | \$8,378 | \$2,101 | \$10,479 | 2014Q1 | 0.0% | \$8,378 | \$2,101 | \$10,479 |
| 30 | RELOCATIIONS - PED | \$1,257 | \$315 | 25% | \$1,572 | 0.0% | \$1,257 | \$315 | \$1,572 | 2014Q1 | 0.0% | \$1,257 | \$315 | \$1,572 |
| 31 | RELOCATIONS - CM | \$838 | \$210 | 25% | \$1,048 | 0.0% | \$838 | \$210 | \$1,048 | 2014Q1 | 0.0% | \$838 | \$210 | \$1,048 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 1.0% | Planning & Environmental Compliance | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 6.0% | Engineering & Design | \$19,046 | \$4,777 | 25% | \$23,823 | 0.0% | \$19,046 | \$4,777 | \$23,823 | 2014Q1 | 0.0% | \$19,046 | \$4,777 | \$23,823 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$1,587 | \$398 | 25% | \$1,985 | 0.0% | \$1,587 | \$398 | \$1,985 | 2014Q1 | 0.0% | \$1,587 | \$398 | \$1,985 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$1,587 | \$398 | 25% | \$1,985 | 0.0% | \$1,587 | \$398 | \$1,985 | 2014Q1 | 0.0% | \$1,587 | \$398 | \$1,985 |
| 1.0% | Contracting & Reprographics | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 3.0% | Engineering During Construction | \$9,523 | \$2,388 | 25% | \$11,911 | 0.0% | \$9,523 | \$2,388 | \$11,911 | 2014Q1 | 0.0% | \$9,523 | \$2,388 | \$11,911 |
| 1.0% | Planning During Construction | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 1.0% | Project Operations | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$20,633 | \$5,175 | 25% | \$25,808 | 0.0% | \$20,633 | \$5,175 | \$25,808 | 2014Q1 | 0.0% | \$20,633 | \$5,175 | \$25,808 |
| 1.5% | Project Operation: | \$4,761 | \$1,194 | 25% | \$5,955 | 0.0% | \$4,761 | \$1,194 | \$5,955 | 2014Q1 | 0.0% | \$4,761 | \$1,194 | \$5,955 |
| 2.0% | Project Management | \$6,349 | \$1,592 | 25% | \$7,941 | 0.0% | \$6,349 | \$1,592 | \$7,941 | 2014Q1 | 0.0% | \$6,349 | \$1,592 | \$7,941 |
| CONTRACT COST TOTALS: | | \$486,831 | \$124,993 | | \$611,824 | | \$486,831 | \$124,993 | \$611,824 | | | \$486,831 | \$124,993 | \$611,824 |

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014
Page 3 of 3

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-7A
LOCATION: Stockton CA
This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division
POC: CHIEF, COST ENGINEERING, Jeremiah Frost
PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|---|---------------|-------------|----------------|--|---------------|---------------|----------------|---|------------|---------------|---------------|---------------|
| | | Estimate Prepared: 6/9/2014 Effective Price Level: 41913 | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Mid-Point Date | ESC (%) | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | C Stockton, Fixes B & C | | | | | | | | | | | | | |
| | COMPOSITE INDEX (WEIGHTED AVERAGE) | | | 21% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$6,104 | \$1,262 | 21% | \$7,366 | 0.0% | \$6,104 | \$1,262 | \$7,366 | 2014Q1 | 0.0% | \$6,104 | \$1,262 | \$7,366 |
| 11 | LEVEES & FLOODWALLS | \$76,889 | \$15,901 | 21% | \$92,789 | 0.0% | \$76,889 | \$15,901 | \$92,789 | 2014Q1 | 0.0% | \$76,889 | \$15,901 | \$92,789 |
| 15 | FLOODWAY CONTROL & DIVERSION STR | \$14,187 | \$2,934 | 21% | \$17,121 | 0.0% | \$14,187 | \$2,934 | \$17,121 | 2014Q1 | 0.0% | \$14,187 | \$2,934 | \$17,121 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$2,883 | \$596 | 21% | \$3,479 | 0.0% | \$2,883 | \$596 | \$3,479 | 2014Q1 | 0.0% | \$2,883 | \$596 | \$3,479 |
| | | | | | | | \$0 | | | | | | | |
| | CONSTRUCTION ESTIMATE TOTALS: | \$100,063 | \$20,693 | 21% | \$120,755 | | \$100,063 | \$20,693 | \$120,755 | | | \$100,063 | \$20,693 | \$120,755 |
| 01 | LANDS AND DAMAGES | \$22,578 | \$5,972 | 26% | \$28,550 | 0.0% | \$22,578 | \$5,972 | \$28,550 | 2014Q1 | 0.0% | \$22,578 | \$5,972 | \$28,550 |
| 02 | RELOCATIONS | \$8,240 | \$1,704 | 21% | \$9,944 | 0.0% | \$8,240 | \$1,704 | \$9,944 | 2014Q1 | 0.0% | \$8,240 | \$1,704 | \$9,944 |
| 30 | RELOCATIONS - PED | \$1,236 | \$256 | 21% | \$1,492 | 0.0% | \$1,236 | \$256 | \$1,492 | 2014Q1 | 0.0% | \$1,236 | \$256 | \$1,492 |
| 31 | RELOCATIONS - CM | \$824 | \$170 | 21% | \$994 | 0.0% | \$824 | \$170 | \$994 | 2014Q1 | 0.0% | \$824 | \$170 | \$994 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$1,001 | \$207 | 21% | \$1,208 | 0.0% | \$1,001 | \$207 | \$1,208 | 2014Q1 | 0.0% | \$1,001 | \$207 | \$1,208 |
| 1.0% | Planning & Environmental Compliance | \$1,001 | \$207 | 21% | \$1,208 | 0.0% | \$1,001 | \$207 | \$1,208 | 2014Q1 | 0.0% | \$1,001 | \$207 | \$1,208 |
| 6.0% | Engineering & Design | \$6,004 | \$1,242 | 21% | \$7,246 | 0.0% | \$6,004 | \$1,242 | \$7,246 | 2014Q1 | 0.0% | \$6,004 | \$1,242 | \$7,246 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$500 | \$103 | 21% | \$603 | 0.0% | \$500 | \$103 | \$603 | 2014Q1 | 0.0% | \$500 | \$103 | \$603 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$500 | \$103 | 21% | \$603 | 0.0% | \$500 | \$103 | \$603 | 2014Q1 | 0.0% | \$500 | \$103 | \$603 |
| 1.0% | Contracting & Reprographics | \$1,001 | \$207 | 21% | \$1,208 | 0.0% | \$1,001 | \$207 | \$1,208 | 2014Q1 | 0.0% | \$1,001 | \$207 | \$1,208 |
| 3.0% | Engineering During Construction | \$3,002 | \$621 | 21% | \$3,623 | 0.0% | \$3,002 | \$621 | \$3,623 | 2014Q1 | 0.0% | \$3,002 | \$621 | \$3,623 |
| 1.0% | Planning During Construction | \$1,001 | \$207 | 21% | \$1,208 | 0.0% | \$1,001 | \$207 | \$1,208 | 2014Q1 | 0.0% | \$1,001 | \$207 | \$1,208 |
| 1.0% | Project Operations | \$1,001 | \$207 | 21% | \$1,208 | 0.0% | \$1,001 | \$207 | \$1,208 | 2014Q1 | 0.0% | \$1,001 | \$207 | \$1,208 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$6,504 | \$1,345 | 21% | \$7,849 | 0.0% | \$6,504 | \$1,345 | \$7,849 | 2014Q1 | 0.0% | \$6,504 | \$1,345 | \$7,849 |
| 1.5% | Project Operation: | \$1,501 | \$310 | 21% | \$1,811 | 0.0% | \$1,501 | \$310 | \$1,811 | 2014Q1 | 0.0% | \$1,501 | \$310 | \$1,811 |
| 2.0% | Project Management | \$2,001 | \$414 | 21% | \$2,415 | 0.0% | \$2,001 | \$414 | \$2,415 | 2014Q1 | 0.0% | \$2,001 | \$414 | \$2,415 |
| | CONTRACT COST TOTALS: | \$157,957 | \$33,968 | | \$191,926 | | \$157,957 | \$33,968 | \$191,926 | | | \$157,957 | \$33,968 | \$191,926 |

****** TOTAL PROJECT COST SUMMARY ******

Printed:6/12/2014

Page 1 of 4

PROJECT: Lower San Joaquin River Feas Study - Alt LS-7B
 PROJECT NO: 105785
 LOCATION: Stockton CA

DISTRICT: SPD South Pacific Division
 POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|-------------|----------------|--|---------------|---------------|----------------|---|---|---------------|---------------|---------------|
| | | | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Spent Thru: 1-Oct-14 (\$K) | | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| ALL | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 21% | \$0 | - | \$0 | \$0 | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$51,051 | \$11,535 | 23% | \$62,586 | 0.0% | \$51,051 | \$11,535 | \$62,586 | \$0 | | \$51,051 | \$11,535 | \$62,586 |
| 11 | LEVEES & FLOODWALLS | \$560,809 | \$116,789 | 21% | \$677,598 | 0.0% | \$560,809 | \$116,789 | \$677,598 | \$0 | | \$560,809 | \$116,789 | \$677,598 |
| 15 | FLOODWAY CONTROL & DIVERSION STRUCTURES | \$29,785 | \$6,864 | 23% | \$36,649 | 0.0% | \$29,785 | \$6,864 | \$36,649 | \$0 | | \$29,785 | \$6,864 | \$36,649 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$17,737 | \$3,778 | 21% | \$21,514 | 0.0% | \$17,737 | \$3,778 | \$21,514 | \$0 | | \$17,737 | \$3,778 | \$21,514 |
| CONSTRUCTION ESTIMATE TOTALS: | | \$659,382 | \$138,966 | | \$798,347 | 0.0% | \$659,382 | \$138,966 | \$798,347 | \$0 | | \$659,382 | \$138,966 | \$798,347 |
| 01 | LANDS AND DAMAGES | \$114,975 | \$31,858 | 28% | \$146,833 | 0.0% | \$114,975 | \$31,858 | \$146,833 | \$0 | | \$114,975 | \$31,858 | \$146,833 |
| 02 | RELOCATIONS | \$26,131 | \$5,343 | 20% | \$31,474 | 0.0% | \$26,131 | \$5,343 | \$31,474 | \$0 | | \$26,131 | \$5,343 | \$31,474 |
| 30 | RELOCATIONS - PED | \$3,920 | \$801 | 20% | \$4,721 | 0.0% | \$3,920 | \$801 | \$4,721 | \$0 | | \$3,920 | \$801 | \$4,721 |
| 31 | RELOCATIONS - CM | \$2,613 | \$534 | 20% | \$3,147 | 0.0% | \$2,613 | \$534 | \$3,147 | \$0 | | \$2,613 | \$534 | \$3,147 |
| | | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN | \$98,903 | \$20,844 | 21% | \$119,747 | 0.0% | \$98,903 | \$20,844 | \$119,747 | \$0 | | \$98,903 | \$20,844 | \$119,747 |
| 31 | CONSTRUCTION MANAGEMENT | \$65,937 | \$13,896 | 21% | \$79,833 | 0.0% | \$65,937 | \$13,896 | \$79,833 | \$0 | | \$65,937 | \$13,896 | \$79,833 |
| PROJECT COST TOTALS: | | \$971,861 | \$212,242 | 22% | \$1,184,103 | | \$971,861 | \$212,242 | \$1,184,103 | \$0 | | \$971,861 | \$212,242 | \$1,184,103 |

 CHIEF, COST ENGINEERING, Jeremiah Frost

 PROJECT MANAGER, Joana Savinon

 CHIEF, REAL ESTATE, Sharon Caine

 CHIEF, ENGINEERING, Rick Poeppelman

ESTIMATED TOTAL PROJECT COST: \$1,184,103,000

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 2 of 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-7B
 LOCATION: Stockton CA
 This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division
 POC: CHIEF, COST ENGINEERING, Jeremiah Frost
 PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|---|-----------|------|-----------|--|-----------|-----------|-----------|---|------|-----------|-----------|-----------|
| | | Estimate Prepared: 6/9/2014 Effective Price Level: 41913 | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| | | RISK BASED | | | | | | | | | | | | |
| WBS | Civil Works | COST | CNTG | CNTG | TOTAL | ESC | COST | CNTG | TOTAL | Mid-Point | ESC | COST | CNTG | FULL |
| NUMBER | Feature & Sub-Feature Description | (\$K) | (\$K) | (%) | (\$K) | (%) | (\$K) | (\$K) | (\$K) | Date | (%) | (\$K) | (\$K) | (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | N Stockton, Fix B | | | | | | | | | | | | | |
| | COMPOSITE INDEX (WEIGHTED AVERAGE) | | \$0 | 25% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$33,941 | \$8,513 | 25% | \$42,454 | 0.0% | \$33,941 | \$8,513 | \$42,454 | 2014Q1 | 0.0% | \$33,941 | \$8,513 | \$42,454 |
| 11 | LEVEES & FLOODWALLS | \$259,009 | \$64,959 | 25% | \$323,969 | 0.0% | \$259,009 | \$64,959 | \$323,969 | 2014Q1 | 0.0% | \$259,009 | \$64,959 | \$323,969 |
| 15 | FLOODWAY CONTROL & DIVERSION STR | \$15,598 | \$3,912 | 25% | \$19,510 | 0.0% | \$15,598 | \$3,912 | \$19,510 | 2014Q1 | 0.0% | \$15,598 | \$3,912 | \$19,510 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$8,872 | \$2,225 | 25% | \$11,098 | 0.0% | \$8,872 | \$2,225 | \$11,098 | 2014Q1 | 0.0% | \$8,872 | \$2,225 | \$11,098 |
| | | | \$0 | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$317,421 | \$79,609 | 25% | \$397,030 | | \$317,421 | \$79,609 | \$397,030 | | | \$317,421 | \$79,609 | \$397,030 |
| 01 | LANDS AND DAMAGES | \$78,910 | \$22,663 | 29% | \$101,573 | 0.0% | \$78,910 | \$22,663 | \$101,573 | 2014Q1 | 0.0% | \$78,910 | \$22,663 | \$101,573 |
| 02 | RELOCATIONS | \$8,378 | \$2,101 | 25% | \$10,479 | 0.0% | \$8,378 | \$2,101 | \$10,479 | 2014Q1 | 0.0% | \$8,378 | \$2,101 | \$10,479 |
| 30 | RELOCATIIONS - PED | \$1,257 | \$315 | 25% | \$1,572 | 0.0% | \$1,257 | \$315 | \$1,572 | 2014Q1 | 0.0% | \$1,257 | \$315 | \$1,572 |
| 31 | RELOCATIONS - CM | \$838 | \$210 | 25% | \$1,048 | 0.0% | \$838 | \$210 | \$1,048 | 2014Q1 | 0.0% | \$838 | \$210 | \$1,048 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 1.0% | Planning & Environmental Compliance | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 6.0% | Engineering & Design | \$19,045 | \$4,776 | 25% | \$23,821 | 0.0% | \$19,045 | \$4,776 | \$23,821 | 2014Q1 | 0.0% | \$19,045 | \$4,776 | \$23,821 |
| 0.5% | Reviews, ATRs, IEPs, VE | \$1,587 | \$398 | 25% | \$1,985 | 0.0% | \$1,587 | \$398 | \$1,985 | 2014Q1 | 0.0% | \$1,587 | \$398 | \$1,985 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$1,587 | \$398 | 25% | \$1,985 | 0.0% | \$1,587 | \$398 | \$1,985 | 2014Q1 | 0.0% | \$1,587 | \$398 | \$1,985 |
| 1.0% | Contracting & Reprographics | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 3.0% | Engineering During Construction | \$9,523 | \$2,388 | 25% | \$11,911 | 0.0% | \$9,523 | \$2,388 | \$11,911 | 2014Q1 | 0.0% | \$9,523 | \$2,388 | \$11,911 |
| 1.0% | Planning During Construction | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 1.0% | Project Operations | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$20,632 | \$5,175 | 25% | \$25,807 | 0.0% | \$20,632 | \$5,175 | \$25,807 | 2014Q1 | 0.0% | \$20,632 | \$5,175 | \$25,807 |
| 1.5% | Project Operation: | \$4,761 | \$1,194 | 25% | \$5,955 | 0.0% | \$4,761 | \$1,194 | \$5,955 | 2014Q1 | 0.0% | \$4,761 | \$1,194 | \$5,955 |
| 2.0% | Project Management | \$6,348 | \$1,592 | 25% | \$7,940 | 0.0% | \$6,348 | \$1,592 | \$7,940 | 2014Q1 | 0.0% | \$6,348 | \$1,592 | \$7,940 |
| CONTRACT COST TOTALS: | | \$486,156 | \$124,800 | | \$610,956 | | \$486,156 | \$124,800 | \$610,956 | | | \$486,156 | \$124,800 | \$610,956 |

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014
Page 3 of 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-7B
LOCATION: Stockton CA
This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division
POC: CHIEF, COST ENGINEERING, Jeremiah Frost
PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|------------------------------|----------------|---|---------------|--------------------------------------|----------------|---|------------|---------------|---------------|---------------|
| | | Estimate Prepared: 6/9/2014 | | Effective Price Level: 41913 | | Program Year (Budget EC): 2015 | | Effective Price Level Date: 1 OCT 14 | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Mid-Point Date | ESC (%) | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | C Stockton, Fixes B & C | | | | | | | | | | | | | |
| | COMPOSITE INDEX (WEIGHTED AVERAGE) | | \$0 | 21% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$5,811 | \$1,209 | 21% | \$7,020 | 0.0% | \$5,811 | \$1,209 | \$7,020 | 2014Q1 | 0.0% | \$5,811 | \$1,209 | \$7,020 |
| 11 | LEVEES & FLOODWALLS | \$71,224 | \$14,822 | 21% | \$86,045 | 0.0% | \$71,224 | \$14,822 | \$86,045 | 2014Q1 | 0.0% | \$71,224 | \$14,822 | \$86,045 |
| 15 | FLOODWAY CONTROL & DIVERSION STR | \$14,187 | \$2,952 | 21% | \$17,139 | 0.0% | \$14,187 | \$2,952 | \$17,139 | 2014Q1 | 0.0% | \$14,187 | \$2,952 | \$17,139 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$2,726 | \$567 | 21% | \$3,293 | 0.0% | \$2,726 | \$567 | \$3,293 | 2014Q1 | 0.0% | \$2,726 | \$567 | \$3,293 |
| | | | \$0 | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$93,947 | \$19,550 | 21% | \$113,498 | | \$93,947 | \$19,550 | \$113,498 | | | \$93,947 | \$19,550 | \$113,498 |
| 01 | LANDS AND DAMAGES | \$21,622 | \$5,734 | 27% | \$27,357 | 0.0% | \$21,622 | \$5,734 | \$27,357 | 2014Q1 | 0.0% | \$21,622 | \$5,734 | \$27,357 |
| 02 | RELOCATIONS | \$8,240 | \$1,715 | 21% | \$9,955 | 0.0% | \$8,240 | \$1,715 | \$9,955 | 2014Q1 | 0.0% | \$8,240 | \$1,715 | \$9,955 |
| 30 | RELOCATIONS - PED | \$1,236 | \$257 | 21% | \$1,493 | 0.0% | \$1,236 | \$257 | \$1,493 | 2014Q1 | 0.0% | \$1,236 | \$257 | \$1,493 |
| 31 | RELOCATIONS - CM | \$824 | \$171 | 21% | \$995 | 0.0% | \$824 | \$171 | \$995 | 2014Q1 | 0.0% | \$824 | \$171 | \$995 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$939 | \$195 | 21% | \$1,134 | 0.0% | \$939 | \$195 | \$1,134 | 2014Q1 | 0.0% | \$939 | \$195 | \$1,134 |
| 1.0% | Planning & Environmental Compliance | \$939 | \$195 | 21% | \$1,134 | 0.0% | \$939 | \$195 | \$1,134 | 2014Q1 | 0.0% | \$939 | \$195 | \$1,134 |
| 6.0% | Engineering & Design | \$5,637 | \$1,173 | 21% | \$6,810 | 0.0% | \$5,637 | \$1,173 | \$6,810 | 2014Q1 | 0.0% | \$5,637 | \$1,173 | \$6,810 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$470 | \$98 | 21% | \$568 | 0.0% | \$470 | \$98 | \$568 | 2014Q1 | 0.0% | \$470 | \$98 | \$568 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$470 | \$98 | 21% | \$568 | 0.0% | \$470 | \$98 | \$568 | 2014Q1 | 0.0% | \$470 | \$98 | \$568 |
| 1.0% | Contracting & Reprographics | \$939 | \$195 | 21% | \$1,134 | 0.0% | \$939 | \$195 | \$1,134 | 2014Q1 | 0.0% | \$939 | \$195 | \$1,134 |
| 3.0% | Engineering During Construction | \$2,818 | \$586 | 21% | \$3,404 | 0.0% | \$2,818 | \$586 | \$3,404 | 2014Q1 | 0.0% | \$2,818 | \$586 | \$3,404 |
| 1.0% | Planning During Construction | \$939 | \$195 | 21% | \$1,134 | 0.0% | \$939 | \$195 | \$1,134 | 2014Q1 | 0.0% | \$939 | \$195 | \$1,134 |
| 1.0% | Project Operations | \$939 | \$195 | 21% | \$1,134 | 0.0% | \$939 | \$195 | \$1,134 | 2014Q1 | 0.0% | \$939 | \$195 | \$1,134 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$6,107 | \$1,271 | 21% | \$7,378 | 0.0% | \$6,107 | \$1,271 | \$7,378 | 2014Q1 | 0.0% | \$6,107 | \$1,271 | \$7,378 |
| 1.5% | Project Operation: | \$1,409 | \$293 | 21% | \$1,702 | 0.0% | \$1,409 | \$293 | \$1,702 | 2014Q1 | 0.0% | \$1,409 | \$293 | \$1,702 |
| 2.0% | Project Management | \$1,879 | \$391 | 21% | \$2,270 | 0.0% | \$1,879 | \$391 | \$2,270 | 2014Q1 | 0.0% | \$1,879 | \$391 | \$2,270 |
| CONTRACT COST TOTALS: | | \$149,354 | \$32,315 | | \$181,670 | | \$149,354 | \$32,315 | \$181,670 | | | \$149,354 | \$32,315 | \$181,670 |

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014
Page 4 of 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-7B
LOCATION: Stockton CA
This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division
POC: CHIEF, COST ENGINEERING, Jeremiah Frost
PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--|--|--|---------------|-------------------|----------------|---|---------------|------------------|----------------|---|------------|---------------|---------------|---------------|
| | | Estimate Prepared: Effective Price Level: | | 6/9/2014 41913 | | Program Year (Budget EC): Effective Price Level Date: | | 2015 1 OCT 14 | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Mid-Point Date | ESC (%) | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| RD 17 Fix E | | | | | | | | | | | | | | |
| ALL | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 16% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$11,298 | \$1,813 | 16% | \$13,112 | 0.0% | \$11,298 | \$1,813 | \$13,112 | 2014Q1 | 0.0% | \$11,298 | \$1,813 | \$13,112 |
| 11 | LEVEES & FLOODWALLS | \$230,577 | \$37,008 | 16% | \$267,584 | 0.0% | \$230,577 | \$37,008 | \$267,584 | 2014Q1 | 0.0% | \$230,577 | \$37,008 | \$267,584 |
| 15 | FLOODWAY CONTROL & DIVERSION STR | \$0 | \$0 | 16% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$6,138 | \$985 | 16% | \$7,124 | 0.0% | \$6,138 | \$985 | \$7,124 | 2014Q1 | 0.0% | \$6,138 | \$985 | \$7,124 |
| | | | | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$248,014 | \$39,806 | 16% | \$287,820 | | \$248,014 | \$39,806 | \$287,820 | | | \$248,014 | \$39,806 | \$287,820 |
| 01 | LANDS AND DAMAGES | \$14,443 | \$3,460 | 24% | \$17,903 | 0.0% | \$14,443 | \$3,460 | \$17,903 | 2014Q1 | 0.0% | \$14,443 | \$3,460 | \$17,903 |
| 02 | RELOCATIONS | \$9,514 | \$1,527 | 16% | \$11,041 | 0.0% | \$9,514 | \$1,527 | \$11,041 | 2014Q1 | 0.0% | \$9,514 | \$1,527 | \$11,041 |
| 30 | RELOCATIONS - PED | \$1,427 | \$229 | 16% | \$1,656 | 0.0% | \$1,427 | \$229 | \$1,656 | 2014Q1 | 0.0% | \$1,427 | \$229 | \$1,656 |
| 31 | RELOCATIONS - CM | \$951 | \$153 | 16% | \$1,104 | 0.0% | \$951 | \$153 | \$1,104 | 2014Q1 | 0.0% | \$951 | \$153 | \$1,104 |
| 30 PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | | |
| 1.0% | Project Management | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 1.0% | Planning & Environmental Compliance | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 6.0% | Engineering & Design | \$14,881 | \$2,388 | 16% | \$17,269 | 0.0% | \$14,881 | \$2,388 | \$17,269 | 2014Q1 | 0.0% | \$14,881 | \$2,388 | \$17,269 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$1,240 | \$199 | 16% | \$1,439 | 0.0% | \$1,240 | \$199 | \$1,439 | 2014Q1 | 0.0% | \$1,240 | \$199 | \$1,439 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$1,240 | \$199 | 16% | \$1,439 | 0.0% | \$1,240 | \$199 | \$1,439 | 2014Q1 | 0.0% | \$1,240 | \$199 | \$1,439 |
| 1.0% | Contracting & Reprographics | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 3.0% | Engineering During Construction | \$7,440 | \$1,194 | 16% | \$8,634 | 0.0% | \$7,440 | \$1,194 | \$8,634 | 2014Q1 | 0.0% | \$7,440 | \$1,194 | \$8,634 |
| 1.0% | Planning During Construction | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 1.0% | Project Operations | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 31 CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$16,121 | \$2,587 | 16% | \$18,708 | 0.0% | \$16,121 | \$2,587 | \$18,708 | 2014Q1 | 0.0% | \$16,121 | \$2,587 | \$18,708 |
| 1.5% | Project Operation: | \$3,720 | \$597 | 16% | \$4,317 | 0.0% | \$3,720 | \$597 | \$4,317 | 2014Q1 | 0.0% | \$3,720 | \$597 | \$4,317 |
| 2.0% | Project Management | \$4,960 | \$796 | 16% | \$5,756 | 0.0% | \$4,960 | \$796 | \$5,756 | 2014Q1 | 0.0% | \$4,960 | \$796 | \$5,756 |
| CONTRACT COST TOTALS: | | \$336,350 | \$55,127 | | \$391,477 | | \$336,350 | \$55,127 | \$391,477 | | | \$336,350 | \$55,127 | \$391,477 |

****** TOTAL PROJECT COST SUMMARY ******

Printed:6/12/2014

Page 1 of 3

PROJECT: Lower San Joaquin River Feas Study - Alt LS-8A
PROJECT NO: 105785
LOCATION: Stockton CA

DISTRICT: SPD South Pacific Division
POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|-------------|----------------|--|---------------|---------------|----------------|---|---|---------------|---------------|---------------|
| | | | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Spent Thru: 1-Oct-14 (\$K) | | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| ALL | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 24% | \$0 | - | \$0 | \$0 | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$45,200 | \$10,929 | 24% | \$56,129 | 0.0% | \$45,200 | \$10,929 | \$56,129 | \$0 | | \$45,200 | \$10,929 | \$56,129 |
| 11 | LEVEES & FLOODWALLS | \$396,985 | \$94,040 | 24% | \$491,025 | 0.0% | \$396,985 | \$94,040 | \$491,025 | \$0 | | \$396,985 | \$94,040 | \$491,025 |
| 15 | FLOODWAY CONTROL & DIVERSION STRUCTURES | \$29,785 | \$6,841 | 23% | \$36,626 | 0.0% | \$29,785 | \$6,841 | \$36,626 | \$0 | | \$29,785 | \$6,841 | \$36,626 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$13,743 | \$3,257 | 24% | \$17,000 | 0.0% | \$13,743 | \$3,257 | \$17,000 | \$0 | | \$13,743 | \$3,257 | \$17,000 |
| CONSTRUCTION ESTIMATE TOTALS: | | \$485,713 | \$115,067 | | \$600,781 | 0.0% | \$485,713 | \$115,067 | \$600,781 | \$0 | | \$485,713 | \$115,067 | \$600,781 |
| 01 | LANDS AND DAMAGES | \$116,166 | \$31,936 | 27% | \$148,102 | 0.0% | \$116,166 | \$31,936 | \$148,102 | \$0 | | \$116,166 | \$31,936 | \$148,102 |
| 02 | RELOCATIONS | \$23,797 | \$5,443 | 23% | \$29,240 | 0.0% | \$23,797 | \$5,443 | \$29,240 | \$0 | | \$23,797 | \$5,443 | \$29,240 |
| 30 | RELOCATIONS - PED | \$3,569 | \$816 | 23% | \$4,386 | 0.0% | \$3,569 | \$816 | \$4,386 | \$0 | | \$3,569 | \$816 | \$4,386 |
| 31 | RELOCATIONS - CM | \$2,380 | \$544 | 23% | \$2,924 | 0.0% | \$2,380 | \$544 | \$2,924 | \$0 | | \$2,380 | \$544 | \$2,924 |
| | | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN | \$72,855 | \$17,260 | 24% | \$90,115 | 0.0% | \$72,855 | \$17,260 | \$90,115 | \$0 | | \$72,855 | \$17,260 | \$90,115 |
| 31 | CONSTRUCTION MANAGEMENT | \$48,572 | \$11,507 | 24% | \$60,079 | 0.0% | \$48,572 | \$11,507 | \$60,079 | \$0 | | \$48,572 | \$11,507 | \$60,079 |
| PROJECT COST TOTALS: | | \$753,052 | \$182,573 | 24% | \$935,625 | | \$753,052 | \$182,573 | \$935,625 | \$0 | | \$753,052 | \$182,573 | \$935,625 |

CHIEF, COST ENGINEERING, Jeremiah Frost

PROJECT MANAGER, Joana Savinon

CHIEF, REAL ESTATE, Sharon Caine

CHIEF, ENGINEERING, Rick Poeppelman

ESTIMATED TOTAL PROJECT COST: \$935,625,000

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 2 of 3

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-8A

LOCATION: Stockton CA

This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division

POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--|-----------|-------------------|-----------|---|-----------|------------------|-----------|---|------|-----------|-----------|-----------|
| | | Estimate Prepared: Effective Price Level: | | 6/9/2014 41913 | | Program Year (Budget EC): Effective Price Level Date: | | 2015 1 OCT 14 | | | | | | |
| | | RISK BASED | | | | | | | | | | | | |
| WBS | Civil Works | COST | CNTG | CNTG | TOTAL | ESC | COST | CNTG | TOTAL | Mid-Point | ESC | COST | CNTG | FULL |
| NUMBER | Feature & Sub-Feature Description | (\$K) | (\$K) | (%) | (\$K) | (%) | (\$K) | (\$K) | (\$K) | Date | (%) | (\$K) | (\$K) | (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | N Stockton, Fix F | | | | | | | | | | | | | |
| | COMPOSITE INDEX (WEIGHTED AVERAGE) | | \$0 | 25% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$36,818 | \$9,186 | 25% | \$46,005 | 0.0% | \$36,818 | \$9,186 | \$46,005 | 2014Q1 | 0.0% | \$36,818 | \$9,186 | \$46,005 |
| 11 | LEVEES & FLOODWALLS | \$276,611 | \$69,014 | 25% | \$345,626 | 0.0% | \$276,611 | \$69,014 | \$345,626 | 2014Q1 | 0.0% | \$276,611 | \$69,014 | \$345,626 |
| 15 | FLOODWAY CONTROL & DIVERSION STRU | \$15,598 | \$3,892 | 25% | \$19,490 | 0.0% | \$15,598 | \$3,892 | \$19,490 | 2014Q1 | 0.0% | \$15,598 | \$3,892 | \$19,490 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$9,616 | \$2,399 | 25% | \$12,015 | 0.0% | \$9,616 | \$2,399 | \$12,015 | 2014Q1 | 0.0% | \$9,616 | \$2,399 | \$12,015 |
| | | | | | \$0 | | | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$338,644 | \$84,492 | 25% | \$423,135 | | \$338,644 | \$84,492 | \$423,135 | | | \$338,644 | \$84,492 | \$423,135 |
| 01 | LANDS AND DAMAGES | \$88,701 | \$24,907 | 28% | \$113,608 | 0.0% | \$88,701 | \$24,907 | \$113,608 | 2014Q1 | 0.0% | \$88,701 | \$24,907 | \$113,608 |
| 02 | RELOCATIONS | \$11,921 | \$2,974 | 25% | \$14,895 | 0.0% | \$11,921 | \$2,974 | \$14,895 | 2014Q1 | 0.0% | \$11,921 | \$2,974 | \$14,895 |
| 30 | RELOCATIIONS - PED | \$1,788 | \$446 | 25% | \$2,234 | 0.0% | \$1,788 | \$446 | \$2,234 | 2014Q1 | 0.0% | \$1,788 | \$446 | \$2,234 |
| 31 | RELOCATIONS - CM | \$1,192 | \$297 | 25% | \$1,490 | 0.0% | \$1,192 | \$297 | \$1,490 | 2014Q1 | 0.0% | \$1,192 | \$297 | \$1,490 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 1.0% | Planning & Environmental Compliance | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 6.0% | Engineering & Design | \$20,319 | \$5,070 | 25% | \$25,389 | 0.0% | \$20,319 | \$5,070 | \$25,389 | 2014Q1 | 0.0% | \$20,319 | \$5,070 | \$25,389 |
| 0.5% | Reviews, ATRs, IEPs, VE | \$1,693 | \$422 | 25% | \$2,115 | 0.0% | \$1,693 | \$422 | \$2,115 | 2014Q1 | 0.0% | \$1,693 | \$422 | \$2,115 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$1,693 | \$422 | 25% | \$2,115 | 0.0% | \$1,693 | \$422 | \$2,115 | 2014Q1 | 0.0% | \$1,693 | \$422 | \$2,115 |
| 1.0% | Contracting & Reprographics | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 3.0% | Engineering During Construction | \$10,159 | \$2,535 | 25% | \$12,694 | 0.0% | \$10,159 | \$2,535 | \$12,694 | 2014Q1 | 0.0% | \$10,159 | \$2,535 | \$12,694 |
| 1.0% | Planning During Construction | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 1.0% | Project Operations | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$22,012 | \$5,492 | 25% | \$27,504 | 0.0% | \$22,012 | \$5,492 | \$27,504 | 2014Q1 | 0.0% | \$22,012 | \$5,492 | \$27,504 |
| 1.5% | Project Operation: | \$5,080 | \$1,267 | 25% | \$6,347 | 0.0% | \$5,080 | \$1,267 | \$6,347 | 2014Q1 | 0.0% | \$5,080 | \$1,267 | \$6,347 |
| 2.0% | Project Management | \$6,773 | \$1,690 | 25% | \$8,463 | 0.0% | \$6,773 | \$1,690 | \$8,463 | 2014Q1 | 0.0% | \$6,773 | \$1,690 | \$8,463 |
| CONTRACT COST TOTALS: | | \$526,905 | \$134,239 | | \$661,144 | | \$526,905 | \$134,239 | \$661,144 | | | \$526,905 | \$134,239 | \$661,144 |

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014
Page 3 of 3

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-8A
LOCATION: Stockton CA
This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division
POC: CHIEF, COST ENGINEERING, Jeremiah Frost
PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|---|--------------------------------|---------------|------------------------------|----------------|---|---------------|--------------------------------------|----------------|---|------------|---------------|---------------|---------------|
| | | Estimate Prepared: 6/9/2014 | | Effective Price Level: 41913 | | Program Year (Budget EC): 2015 | | Effective Price Level Date: 1 OCT 14 | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Mid-Point Date | ESC (%) | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | C Stockton, Fix D + Duck Cr COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 21% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$8,382 | \$1,743 | 21% | \$10,124 | 0.0% | \$8,382 | \$1,743 | \$10,124 | 2014Q1 | 0.0% | \$8,382 | \$1,743 | \$10,124 |
| 11 | LEVEES & FLOODWALLS | \$120,374 | \$25,026 | 21% | \$145,399 | 0.0% | \$120,374 | \$25,026 | \$145,399 | 2014Q1 | 0.0% | \$120,374 | \$25,026 | \$145,399 |
| 15 | FLOODWAY CONTROL & DIVERSION STRU | \$14,187 | \$2,949 | 21% | \$17,136 | 0.0% | \$14,187 | \$2,949 | \$17,136 | 2014Q1 | 0.0% | \$14,187 | \$2,949 | \$17,136 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$4,127 | \$858 | 21% | \$4,985 | 0.0% | \$4,127 | \$858 | \$4,985 | 2014Q1 | 0.0% | \$4,127 | \$858 | \$4,985 |
| | | | | | | | \$0 | | | | | | | |
| | CONSTRUCTION ESTIMATE TOTALS: | \$147,070 | \$30,576 | 21% | \$177,645 | | \$147,070 | \$30,576 | \$177,645 | | | \$147,070 | \$30,576 | \$177,645 |
| 01 | LANDS AND DAMAGES | \$27,465 | \$7,028 | 26% | \$34,493 | 0.0% | \$27,465 | \$7,028 | \$34,493 | 2014Q1 | 0.0% | \$27,465 | \$7,028 | \$34,493 |
| 02 | RELOCATIONS | \$11,876 | \$2,469 | 21% | \$14,345 | 0.0% | \$11,876 | \$2,469 | \$14,345 | 2014Q1 | 0.0% | \$11,876 | \$2,469 | \$14,345 |
| 30 | RELOCATIONS - PED | \$1,781 | \$370 | 21% | \$2,152 | 0.0% | \$1,781 | \$370 | \$2,152 | 2014Q1 | 0.0% | \$1,781 | \$370 | \$2,152 |
| 31 | RELOCATIONS - CM | \$1,188 | \$247 | 21% | \$1,434 | 0.0% | \$1,188 | \$247 | \$1,434 | 2014Q1 | 0.0% | \$1,188 | \$247 | \$1,434 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$1,471 | \$306 | 21% | \$1,777 | 0.0% | \$1,471 | \$306 | \$1,777 | 2014Q1 | 0.0% | \$1,471 | \$306 | \$1,777 |
| 1.0% | Planning & Environmental Compliance | \$1,471 | \$306 | 21% | \$1,777 | 0.0% | \$1,471 | \$306 | \$1,777 | 2014Q1 | 0.0% | \$1,471 | \$306 | \$1,777 |
| 6.0% | Engineering & Design | \$8,824 | \$1,835 | 21% | \$10,659 | 0.0% | \$8,824 | \$1,835 | \$10,659 | 2014Q1 | 0.0% | \$8,824 | \$1,835 | \$10,659 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$735 | \$153 | 21% | \$888 | 0.0% | \$735 | \$153 | \$888 | 2014Q1 | 0.0% | \$735 | \$153 | \$888 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$735 | \$153 | 21% | \$888 | 0.0% | \$735 | \$153 | \$888 | 2014Q1 | 0.0% | \$735 | \$153 | \$888 |
| 1.0% | Contracting & Reprographics | \$1,471 | \$306 | 21% | \$1,777 | 0.0% | \$1,471 | \$306 | \$1,777 | 2014Q1 | 0.0% | \$1,471 | \$306 | \$1,777 |
| 3.0% | Engineering During Construction | \$4,412 | \$917 | 21% | \$5,329 | 0.0% | \$4,412 | \$917 | \$5,329 | 2014Q1 | 0.0% | \$4,412 | \$917 | \$5,329 |
| 1.0% | Planning During Construction | \$1,471 | \$306 | 21% | \$1,777 | 0.0% | \$1,471 | \$306 | \$1,777 | 2014Q1 | 0.0% | \$1,471 | \$306 | \$1,777 |
| 1.0% | Project Operations | \$1,471 | \$306 | 21% | \$1,777 | 0.0% | \$1,471 | \$306 | \$1,777 | 2014Q1 | 0.0% | \$1,471 | \$306 | \$1,777 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$9,560 | \$1,988 | 21% | \$11,548 | 0.0% | \$9,560 | \$1,988 | \$11,548 | 2014Q1 | 0.0% | \$9,560 | \$1,988 | \$11,548 |
| 1.5% | Project Operation: | \$2,206 | \$459 | 21% | \$2,665 | 0.0% | \$2,206 | \$459 | \$2,665 | 2014Q1 | 0.0% | \$2,206 | \$459 | \$2,665 |
| 2.0% | Project Management | \$2,941 | \$611 | 21% | \$3,552 | 0.0% | \$2,941 | \$611 | \$3,552 | 2014Q1 | 0.0% | \$2,941 | \$611 | \$3,552 |
| | CONTRACT COST TOTALS: | \$226,147 | \$48,334 | | \$274,482 | | \$226,147 | \$48,334 | \$274,482 | | | \$226,147 | \$48,334 | \$274,482 |

****** TOTAL PROJECT COST SUMMARY ******

Printed:6/12/2014

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PROJECT: Lower San Joaquin River Feas Study - Alt LS-8B
 PROJECT NO: 105785
 LOCATION: Stockton CA

DISTRICT: SPD South Pacific Division
 POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|-------------|----------------|--|---------------|---------------|----------------|---|---|---------------|---------------|---------------|
| | | | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Spent Thru: 1-Oct-14 (\$K) | | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| 02 | RELOCATIONS | \$0 | \$0 | 21% | \$0 | - | \$0 | \$0 | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$56,237 | \$12,633 | 22% | \$68,870 | 0.0% | \$56,237 | \$12,633 | \$68,870 | \$0 | | \$56,237 | \$12,633 | \$68,870 |
| 11 | LEVEES & FLOODWALLS | \$621,902 | \$129,102 | 21% | \$751,004 | 0.0% | \$621,902 | \$129,102 | \$751,004 | \$0 | | \$621,902 | \$129,102 | \$751,004 |
| 15 | FLOODWAY CONTROL & DIVERSION STRU | \$29,785 | \$6,746 | 23% | \$36,531 | 0.0% | \$29,785 | \$6,746 | \$36,531 | \$0 | | \$29,785 | \$6,746 | \$36,531 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$19,703 | \$4,178 | 21% | \$23,880 | 0.0% | \$19,703 | \$4,178 | \$23,880 | \$0 | | \$19,703 | \$4,178 | \$23,880 |
| CONSTRUCTION ESTIMATE TOTALS: | | \$727,626 | \$152,659 | | \$880,286 | 0.0% | \$727,626 | \$152,659 | \$880,286 | \$0 | | \$727,626 | \$152,659 | \$880,286 |
| 01 | LANDS AND DAMAGES | \$128,824 | \$34,906 | 27% | \$163,730 | 0.0% | \$128,824 | \$34,906 | \$163,730 | \$0 | | \$128,824 | \$34,906 | \$163,730 |
| 02 | RELOCATIONS | \$33,000 | \$6,828 | 21% | \$39,828 | 0.0% | \$33,000 | \$6,828 | \$39,828 | \$0 | | \$33,000 | \$6,828 | \$39,828 |
| 30 | RELOCATIIONS - PED | \$4,950 | \$1,024 | 21% | \$5,974 | 0.0% | \$4,950 | \$1,024 | \$5,974 | \$0 | | \$4,950 | \$1,024 | \$5,974 |
| 31 | RELOCATIONS - CM | \$3,300 | \$683 | 21% | \$3,983 | 0.0% | \$3,300 | \$683 | \$3,983 | \$0 | | \$3,300 | \$683 | \$3,983 |
| | | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN | \$109,143 | \$22,899 | 21% | \$132,042 | 0.0% | \$109,143 | \$22,899 | \$132,042 | \$0 | | \$109,143 | \$22,899 | \$132,042 |
| 31 | CONSTRUCTION MANAGEMENT | \$72,764 | \$15,266 | 21% | \$88,030 | 0.0% | \$72,764 | \$15,266 | \$88,030 | \$0 | | \$72,764 | \$15,266 | \$88,030 |
| PROJECT COST TOTALS: | | \$1,079,607 | \$234,266 | 22% | \$1,313,873 | | \$1,079,607 | \$234,266 | \$1,313,873 | \$0 | | \$1,079,607 | \$234,266 | \$1,313,873 |

CHIEF, COST ENGINEERING, Jeremiah Frost

PROJECT MANAGER, Joana Savinon

CHIEF, REAL ESTATE, Sharon Caine

CHIEF, ENGINEERING, Rick Poeppelman

ESTIMATED TOTAL PROJECT COST: \$1,313,873,000

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 2 of 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-8B

LOCATION: Stockton CA

This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division

POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|-----------|----------|-----------|---|-----------|-----------|-----------|---|------|-----------|-----------|-----------|
| | | Estimate Prepared: | | 6/9/2014 | | Program Year (Budget EC): | | 2015 | | | | | | |
| | | Effective Price Level: | | 41913 | | Effective Price Level Date: | | 1 OCT 14 | | | | | | |
| | | RISK BASED | | | | | | | | | | | | |
| WBS | Civil Works | COST | CNTG | CNTG | TOTAL | ESC | COST | CNTG | TOTAL | Mid-Point | ESC | COST | CNTG | FULL |
| NUMBER | Feature & Sub-Feature Description | (\$K) | (\$K) | (%) | (\$K) | (%) | (\$K) | (\$K) | (\$K) | Date | (%) | (\$K) | (\$K) | (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| N Stockton, Fix F | | | | | | | | | | | | | | |
| ALL | COMPOSITE INDEX (WEIGHTED AVERAGE) | | \$0 | 25% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$36,818 | \$9,186 | 25% | \$46,005 | 0.0% | \$36,818 | \$9,186 | \$46,005 | 2014Q1 | 0.0% | \$36,818 | \$9,186 | \$46,005 |
| 11 | LEVEES & FLOODWALLS | \$276,611 | \$69,014 | 25% | \$345,626 | 0.0% | \$276,611 | \$69,014 | \$345,626 | 2014Q1 | 0.0% | \$276,611 | \$69,014 | \$345,626 |
| 15 | FLOODWAY CONTROL & DIVERSION STRU | \$15,598 | \$3,892 | 25% | \$19,490 | 0.0% | \$15,598 | \$3,892 | \$19,490 | 2014Q1 | 0.0% | \$15,598 | \$3,892 | \$19,490 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$9,598 | \$2,395 | 25% | \$11,992 | 0.0% | \$9,598 | \$2,395 | \$11,992 | 2014Q1 | 0.0% | \$9,598 | \$2,395 | \$11,992 |
| | | | | | | \$0 | | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$338,625 | \$84,487 | 25% | \$423,112 | | \$338,625 | \$84,487 | \$423,112 | | | \$338,625 | \$84,487 | \$423,112 |
| 01 | LANDS AND DAMAGES | \$87,719 | \$24,623 | 28% | \$112,342 | 0.0% | \$87,719 | \$24,623 | \$112,342 | 2014Q1 | 0.0% | \$87,719 | \$24,623 | \$112,342 |
| 02 | RELOCATIONS | \$11,921 | \$2,974 | 25% | \$14,895 | 0.0% | \$11,921 | \$2,974 | \$14,895 | 2014Q1 | 0.0% | \$11,921 | \$2,974 | \$14,895 |
| 30 | RELOCATIIONS - PED | \$1,788 | \$446 | 25% | \$2,234 | 0.0% | \$1,788 | \$446 | \$2,234 | 2014Q1 | 0.0% | \$1,788 | \$446 | \$2,234 |
| 31 | RELOCATIONS - CM | \$1,192 | \$297 | 25% | \$1,490 | 0.0% | \$1,192 | \$297 | \$1,490 | 2014Q1 | 0.0% | \$1,192 | \$297 | \$1,490 |
| 30 PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | | |
| 1.0% | Project Management | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 1.0% | Planning & Environmental Compliance | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 6.0% | Engineering & Design | \$20,318 | \$5,069 | 25% | \$25,387 | 0.0% | \$20,318 | \$5,069 | \$25,387 | 2014Q1 | 0.0% | \$20,318 | \$5,069 | \$25,387 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$1,693 | \$422 | 25% | \$2,115 | 0.0% | \$1,693 | \$422 | \$2,115 | 2014Q1 | 0.0% | \$1,693 | \$422 | \$2,115 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$1,693 | \$422 | 25% | \$2,115 | 0.0% | \$1,693 | \$422 | \$2,115 | 2014Q1 | 0.0% | \$1,693 | \$422 | \$2,115 |
| 1.0% | Contracting & Reprographics | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 3.0% | Engineering During Construction | \$10,159 | \$2,535 | 25% | \$12,694 | 0.0% | \$10,159 | \$2,535 | \$12,694 | 2014Q1 | 0.0% | \$10,159 | \$2,535 | \$12,694 |
| 1.0% | Planning During Construction | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 1.0% | Project Operations | \$3,386 | \$845 | 25% | \$4,231 | 0.0% | \$3,386 | \$845 | \$4,231 | 2014Q1 | 0.0% | \$3,386 | \$845 | \$4,231 |
| 31 CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$22,011 | \$5,492 | 25% | \$27,503 | 0.0% | \$22,011 | \$5,492 | \$27,503 | 2014Q1 | 0.0% | \$22,011 | \$5,492 | \$27,503 |
| 1.5% | Project Operation: | \$5,079 | \$1,267 | 25% | \$6,346 | 0.0% | \$5,079 | \$1,267 | \$6,346 | 2014Q1 | 0.0% | \$5,079 | \$1,267 | \$6,346 |
| 2.0% | Project Management | \$6,773 | \$1,690 | 25% | \$8,463 | 0.0% | \$6,773 | \$1,690 | \$8,463 | 2014Q1 | 0.0% | \$6,773 | \$1,690 | \$8,463 |
| CONTRACT COST TOTALS: | | \$525,902 | \$133,949 | | \$659,851 | | \$525,902 | \$133,949 | \$659,851 | | | \$525,902 | \$133,949 | \$659,851 |

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

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**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-8B

LOCATION: Stockton CA

This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division

POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|------------------------------|----------------|---|---------------|--------------------------------------|----------------|---|------------|---------------|---------------|---------------|
| | | Estimate Prepared: 6/9/2014 | | Effective Price Level: 41913 | | Program Year (Budget EC): 2015 | | Effective Price Level Date: 1 OCT 14 | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Mid-Point Date | ESC (%) | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | C Stockton, Fix D | | | | | | | | | | | | | |
| | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 20% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$8,120 | \$1,634 | 20% | \$9,754 | 0.0% | \$8,120 | \$1,634 | \$9,754 | 2014Q1 | 0.0% | \$8,120 | \$1,634 | \$9,754 |
| 11 | LEVEES & FLOODWALLS | \$114,714 | \$23,080 | 20% | \$137,794 | 0.0% | \$114,714 | \$23,080 | \$137,794 | 2014Q1 | 0.0% | \$114,714 | \$23,080 | \$137,794 |
| 15 | FLOODWAY CONTROL & DIVERSION STRU | \$14,187 | \$2,854 | 20% | \$17,041 | 0.0% | \$14,187 | \$2,854 | \$17,041 | 2014Q1 | 0.0% | \$14,187 | \$2,854 | \$17,041 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$3,957 | \$796 | 20% | \$4,753 | 0.0% | \$3,957 | \$796 | \$4,753 | 2014Q1 | 0.0% | \$3,957 | \$796 | \$4,753 |
| | | | | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$140,978 | \$28,365 | 20% | \$169,342 | | \$140,978 | \$28,365 | \$169,342 | | | \$140,978 | \$28,365 | \$169,342 |
| 01 | LANDS AND DAMAGES | \$26,150 | \$6,686 | 26% | \$32,836 | 0.0% | \$26,150 | \$6,686 | \$32,836 | 2014Q1 | 0.0% | \$26,150 | \$6,686 | \$32,836 |
| 02 | RELOCATIONS | \$11,566 | \$2,327 | 20% | \$13,893 | 0.0% | \$11,566 | \$2,327 | \$13,893 | 2014Q1 | 0.0% | \$11,566 | \$2,327 | \$13,893 |
| 30 | RELOCATIONS - PED | \$1,735 | \$349 | 20% | \$2,084 | 0.0% | \$1,735 | \$349 | \$2,084 | 2014Q1 | 0.0% | \$1,735 | \$349 | \$2,084 |
| 31 | RELOCATIONS - CM | \$1,157 | \$233 | 20% | \$1,389 | 0.0% | \$1,157 | \$233 | \$1,389 | 2014Q1 | 0.0% | \$1,157 | \$233 | \$1,389 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$1,410 | \$284 | 20% | \$1,694 | 0.0% | \$1,410 | \$284 | \$1,694 | 2014Q1 | 0.0% | \$1,410 | \$284 | \$1,694 |
| 1.0% | Planning & Environmental Compliance | \$1,410 | \$284 | 20% | \$1,694 | 0.0% | \$1,410 | \$284 | \$1,694 | 2014Q1 | 0.0% | \$1,410 | \$284 | \$1,694 |
| 6.0% | Engineering & Design | \$8,459 | \$1,702 | 20% | \$10,161 | 0.0% | \$8,459 | \$1,702 | \$10,161 | 2014Q1 | 0.0% | \$8,459 | \$1,702 | \$10,161 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$705 | \$142 | 20% | \$847 | 0.0% | \$705 | \$142 | \$847 | 2014Q1 | 0.0% | \$705 | \$142 | \$847 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$705 | \$142 | 20% | \$847 | 0.0% | \$705 | \$142 | \$847 | 2014Q1 | 0.0% | \$705 | \$142 | \$847 |
| 1.0% | Contracting & Reprographics | \$1,410 | \$284 | 20% | \$1,694 | 0.0% | \$1,410 | \$284 | \$1,694 | 2014Q1 | 0.0% | \$1,410 | \$284 | \$1,694 |
| 3.0% | Engineering During Construction | \$4,229 | \$851 | 20% | \$5,080 | 0.0% | \$4,229 | \$851 | \$5,080 | 2014Q1 | 0.0% | \$4,229 | \$851 | \$5,080 |
| 1.0% | Planning During Construction | \$1,410 | \$284 | 20% | \$1,694 | 0.0% | \$1,410 | \$284 | \$1,694 | 2014Q1 | 0.0% | \$1,410 | \$284 | \$1,694 |
| 1.0% | Project Operations | \$1,410 | \$284 | 20% | \$1,694 | 0.0% | \$1,410 | \$284 | \$1,694 | 2014Q1 | 0.0% | \$1,410 | \$284 | \$1,694 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$9,164 | \$1,844 | 20% | \$11,008 | 0.0% | \$9,164 | \$1,844 | \$11,008 | 2014Q1 | 0.0% | \$9,164 | \$1,844 | \$11,008 |
| 1.5% | Project Operation: | \$2,115 | \$426 | 20% | \$2,541 | 0.0% | \$2,115 | \$426 | \$2,541 | 2014Q1 | 0.0% | \$2,115 | \$426 | \$2,541 |
| 2.0% | Project Management | \$2,820 | \$567 | 20% | \$3,387 | 0.0% | \$2,820 | \$567 | \$3,387 | 2014Q1 | 0.0% | \$2,820 | \$567 | \$3,387 |
| CONTRACT COST TOTALS: | | \$216,832 | \$45,052 | | \$261,883 | | \$216,832 | \$45,052 | \$261,883 | | | \$216,832 | \$45,052 | \$261,883 |

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 4 of 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-8B

LOCATION: Stockton CA

This Estimate reflects the scope and schedule in report;

Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division

POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--|--|--------------------------------|---------------|-------------|----------------|---|---------------|---------------|----------------|---|------------|---------------|---------------|---------------|
| | | Estimate Prepared: | | 6/9/2014 | | Program Year (Budget EC): | | 2015 | | | | | | |
| | | Effective Price Level: | | 41913 | | Effective Price Level Date: | | 1 OCT 14 | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Mid-Point Date | ESC (%) | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| RD 17 Fix E | | | | | | | | | | | | | | |
| 02 | RELOCATIONS | | \$0 | 16% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$11,298 | \$1,813 | 16% | \$13,112 | 0.0% | \$11,298 | \$1,813 | \$13,112 | 2014Q1 | 0.0% | \$11,298 | \$1,813 | \$13,112 |
| 11 | LEVEES & FLOODWALLS | \$230,577 | \$37,008 | 16% | \$267,584 | 0.0% | \$230,577 | \$37,008 | \$267,584 | 2014Q1 | 0.0% | \$230,577 | \$37,008 | \$267,584 |
| 15 | FLOODWAY CONTROL & DIVERSION STRUCTURE | | \$0 | 16% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$6,148 | \$987 | 16% | \$7,135 | 0.0% | \$6,148 | \$987 | \$7,135 | 2014Q1 | 0.0% | \$6,148 | \$987 | \$7,135 |
| | | | \$0 | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$248,023 | \$39,808 | 16% | \$287,831 | | \$248,023 | \$39,808 | \$287,831 | | | \$248,023 | \$39,808 | \$287,831 |
| 01 | LANDS AND DAMAGES | \$14,955 | \$3,597 | 24% | \$18,551 | 0.0% | \$14,955 | \$3,597 | \$18,551 | 2014Q1 | 0.0% | \$14,955 | \$3,597 | \$18,551 |
| 02 | RELOCATIONS | \$9,514 | \$1,527 | 16% | \$11,041 | 0.0% | \$9,514 | \$1,527 | \$11,041 | 2014Q1 | 0.0% | \$9,514 | \$1,527 | \$11,041 |
| 30 | RELOCATIONS - PED | \$1,427 | \$229 | 16% | \$1,656 | 0.0% | \$1,427 | \$229 | \$1,656 | 2014Q1 | 0.0% | \$1,427 | \$229 | \$1,656 |
| 31 | RELOCATIONS - CM | \$951 | \$153 | 16% | \$1,104 | 0.0% | \$951 | \$153 | \$1,104 | 2014Q1 | 0.0% | \$951 | \$153 | \$1,104 |
| 30 PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | | |
| 1.0% | Project Management | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 1.0% | Planning & Environmental Compliance | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 6.0% | Engineering & Design | \$14,881 | \$2,388 | 16% | \$17,269 | 0.0% | \$14,881 | \$2,388 | \$17,269 | 2014Q1 | 0.0% | \$14,881 | \$2,388 | \$17,269 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$1,240 | \$199 | 16% | \$1,439 | 0.0% | \$1,240 | \$199 | \$1,439 | 2014Q1 | 0.0% | \$1,240 | \$199 | \$1,439 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$1,240 | \$199 | 16% | \$1,439 | 0.0% | \$1,240 | \$199 | \$1,439 | 2014Q1 | 0.0% | \$1,240 | \$199 | \$1,439 |
| 1.0% | Contracting & Reprographics | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 3.0% | Engineering During Construction | \$7,441 | \$1,194 | 16% | \$8,635 | 0.0% | \$7,441 | \$1,194 | \$8,635 | 2014Q1 | 0.0% | \$7,441 | \$1,194 | \$8,635 |
| 1.0% | Planning During Construction | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 1.0% | Project Operations | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 31 CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$16,122 | \$2,588 | 16% | \$18,710 | 0.0% | \$16,122 | \$2,588 | \$18,710 | 2014Q1 | 0.0% | \$16,122 | \$2,588 | \$18,710 |
| 1.5% | Project Operation: | \$3,720 | \$597 | 16% | \$4,317 | 0.0% | \$3,720 | \$597 | \$4,317 | 2014Q1 | 0.0% | \$3,720 | \$597 | \$4,317 |
| 2.0% | Project Management | \$4,960 | \$796 | 16% | \$5,756 | 0.0% | \$4,960 | \$796 | \$5,756 | 2014Q1 | 0.0% | \$4,960 | \$796 | \$5,756 |
| CONTRACT COST TOTALS: | | \$336,874 | \$55,265 | | \$392,139 | | \$336,874 | \$55,265 | \$392,139 | | | \$336,874 | \$55,265 | \$392,139 |

****** TOTAL PROJECT COST SUMMARY ******

Printed:6/12/2014

Page 1 of 3

PROJECT: Lower San Joaquin River Feas Study - Alt LS-9A
PROJECT NO: 105785
LOCATION: Stockton CA

DISTRICT: SPD South Pacific Division
POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|-------------|----------------|--|---------------|---------------|----------------|---|---|---------------|---------------|---------------|
| | | | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Spent Thru: 1-Oct-14 (\$K) | | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| ALL | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 24% | \$0 | - | \$0 | \$0 | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$40,970 | \$10,059 | 25% | \$51,029 | 0.0% | \$40,970 | \$10,059 | \$51,029 | \$0 | | \$40,970 | \$10,059 | \$51,029 |
| 11 | LEVEES & FLOODWALLS | \$340,510 | \$82,890 | 24% | \$423,400 | 0.0% | \$340,510 | \$82,890 | \$423,400 | \$0 | | \$340,510 | \$82,890 | \$423,400 |
| 15 | FLOODWAY CONTROL & DIVERSION STRUCTURES | \$39,968 | \$9,273 | 23% | \$49,241 | 0.0% | \$39,968 | \$9,273 | \$49,241 | \$0 | | \$39,968 | \$9,273 | \$49,241 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$12,198 | \$2,957 | 24% | \$15,156 | 0.0% | \$12,198 | \$2,957 | \$15,156 | \$0 | | \$12,198 | \$2,957 | \$15,156 |
| CONSTRUCTION ESTIMATE TOTALS: | | \$433,646 | \$105,179 | | \$538,826 | 0.0% | \$433,646 | \$105,179 | \$538,826 | \$0 | | \$433,646 | \$105,179 | \$538,826 |
| 01 | LANDS AND DAMAGES | \$105,180 | \$29,287 | 28% | \$134,468 | 0.0% | \$105,180 | \$29,287 | \$134,468 | \$0 | | \$105,180 | \$29,287 | \$134,468 |
| 02 | RELOCATIONS | \$16,928 | \$3,982 | 24% | \$20,910 | 0.0% | \$16,928 | \$3,982 | \$20,910 | \$0 | | \$16,928 | \$3,982 | \$20,910 |
| 30 | RELOCATIONS - PED | \$2,539 | \$597 | 24% | \$3,136 | 0.0% | \$2,539 | \$597 | \$3,136 | \$0 | | \$2,539 | \$597 | \$3,136 |
| 31 | RELOCATIONS - CM | \$1,693 | \$398 | 24% | \$2,091 | 0.0% | \$1,693 | \$398 | \$2,091 | \$0 | | \$1,693 | \$398 | \$2,091 |
| | | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN | \$65,044 | \$15,776 | 24% | \$80,820 | 0.0% | \$65,044 | \$15,776 | \$80,820 | \$0 | | \$65,044 | \$15,776 | \$80,820 |
| 31 | CONSTRUCTION MANAGEMENT | \$43,365 | \$10,518 | 24% | \$53,883 | 0.0% | \$43,365 | \$10,518 | \$53,883 | \$0 | | \$43,365 | \$10,518 | \$53,883 |
| PROJECT COST TOTALS: | | \$668,395 | \$165,738 | 25% | \$834,134 | | \$668,395 | \$165,738 | \$834,134 | \$0 | | \$668,395 | \$165,738 | \$834,134 |

CHIEF, COST ENGINEERING, Jeremiah Frost

PROJECT MANAGER, Joana Savinon

CHIEF, REAL ESTATE, Sharon Caine

CHIEF, ENGINEERING, Rick Poeppelman

ESTIMATED TOTAL PROJECT COST: \$834,134,000

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 2 of 3

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-9A

LOCATION: Stockton CA

This Estimate reflects the scope and schedule in report;

Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division

POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|---|-----------|------|-----------|--|-----------|-----------|-----------|---|------|-----------|-----------|-----------|
| | | Estimate Prepared: 6/9/2014 Effective Price Level: 41913 | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| | | RISK BASED | | | | | | | | | | | | |
| WBS | Civil Works | COST | CNTG | CNTG | TOTAL | ESC | COST | CNTG | TOTAL | Mid-Point | ESC | COST | CNTG | FULL |
| NUMBER | Feature & Sub-Feature Description | (\$K) | (\$K) | (%) | (\$K) | (%) | (\$K) | (\$K) | (\$K) | Date | (%) | (\$K) | (\$K) | (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| N Stockton, Fix B | | | | | | | | | | | | | | |
| ALL | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 25% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$33,941 | \$8,513 | 25% | \$42,454 | 0.0% | \$33,941 | \$8,513 | \$42,454 | 2014Q1 | 0.0% | \$33,941 | \$8,513 | \$42,454 |
| 11 | LEVEES & FLOODWALLS | \$259,009 | \$64,959 | 25% | \$323,969 | 0.0% | \$259,009 | \$64,959 | \$323,969 | 2014Q1 | 0.0% | \$259,009 | \$64,959 | \$323,969 |
| 15 | FLOODWAY CONTROL & DIVERSION STRU | \$15,598 | \$3,912 | 25% | \$19,510 | 0.0% | \$15,598 | \$3,912 | \$19,510 | 2014Q1 | 0.0% | \$15,598 | \$3,912 | \$19,510 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$8,887 | \$2,229 | 25% | \$11,116 | 0.0% | \$8,887 | \$2,229 | \$11,116 | 2014Q1 | 0.0% | \$8,887 | \$2,229 | \$11,116 |
| | | | | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$317,436 | \$79,613 | 25% | \$397,048 | | \$317,436 | \$79,613 | \$397,048 | | | \$317,436 | \$79,613 | \$397,048 |
| 01 | LANDS AND DAMAGES | \$79,695 | \$22,880 | 29% | \$102,576 | 0.0% | \$79,695 | \$22,880 | \$102,576 | 2014Q1 | 0.0% | \$79,695 | \$22,880 | \$102,576 |
| 02 | RELOCATIONS | \$8,378 | \$2,101 | 25% | \$10,479 | 0.0% | \$8,378 | \$2,101 | \$10,479 | 2014Q1 | 0.0% | \$8,378 | \$2,101 | \$10,479 |
| 30 | RELOCATIIONS - PED | \$1,257 | \$315 | 25% | \$1,572 | 0.0% | \$1,257 | \$315 | \$1,572 | 2014Q1 | 0.0% | \$1,257 | \$315 | \$1,572 |
| 31 | RELOCATIONS - CM | \$838 | \$210 | 25% | \$1,048 | 0.0% | \$838 | \$210 | \$1,048 | 2014Q1 | 0.0% | \$838 | \$210 | \$1,048 |
| | | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 1.0% | Planning & Environmental Compliance | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 6.0% | Engineering & Design | \$19,046 | \$4,777 | 25% | \$23,823 | 0.0% | \$19,046 | \$4,777 | \$23,823 | 2014Q1 | 0.0% | \$19,046 | \$4,777 | \$23,823 |
| 0.5% | Reviews, ATRs, IEPs, VE | \$1,587 | \$398 | 25% | \$1,985 | 0.0% | \$1,587 | \$398 | \$1,985 | 2014Q1 | 0.0% | \$1,587 | \$398 | \$1,985 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$1,587 | \$398 | 25% | \$1,985 | 0.0% | \$1,587 | \$398 | \$1,985 | 2014Q1 | 0.0% | \$1,587 | \$398 | \$1,985 |
| 1.0% | Contracting & Reprographics | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 3.0% | Engineering During Construction | \$9,523 | \$2,388 | 25% | \$11,911 | 0.0% | \$9,523 | \$2,388 | \$11,911 | 2014Q1 | 0.0% | \$9,523 | \$2,388 | \$11,911 |
| 1.0% | Planning During Construction | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 1.0% | Project Operations | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| | | | | | | | | | | | | | | |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$20,633 | \$5,175 | 25% | \$25,808 | 0.0% | \$20,633 | \$5,175 | \$25,808 | 2014Q1 | 0.0% | \$20,633 | \$5,175 | \$25,808 |
| 1.5% | Project Operation: | \$4,762 | \$1,194 | 25% | \$5,956 | 0.0% | \$4,762 | \$1,194 | \$5,956 | 2014Q1 | 0.0% | \$4,762 | \$1,194 | \$5,956 |
| 2.0% | Project Management | \$6,349 | \$1,592 | 25% | \$7,941 | 0.0% | \$6,349 | \$1,592 | \$7,941 | 2014Q1 | 0.0% | \$6,349 | \$1,592 | \$7,941 |
| CONTRACT COST TOTALS: | | \$486,960 | \$125,023 | | \$611,983 | | \$486,960 | \$125,023 | \$611,983 | | | \$486,960 | \$125,023 | \$611,983 |

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 3 of 3

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-9A

LOCATION: Stockton CA

This Estimate reflects the scope and schedule in report;

Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division

POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|--------------------------------|----------------|---|---------------|--------------------------------------|----------------|---|------------|---------------|---------------|---------------|
| | | Estimate Prepared: 6/9/2014 | | Program Year (Budget EC): 2015 | | Effective Price Level: 41913 | | Effective Price Level Date: 1 OCT 14 | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Mid-Point Date | ESC (%) | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | C Stockton, Fixes B & C + Duck Cr & M Ch | | | | | | | | | | | | | |
| | COMPOSITE INDEX (WEIGHTED AVERAGE | \$0 | \$0 | 22% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$7,029 | \$1,546 | 22% | \$8,575 | 0.0% | \$7,029 | \$1,546 | \$8,575 | 2014Q1 | 0.0% | \$7,029 | \$1,546 | \$8,575 |
| 11 | LEVEES & FLOODWALLS | \$81,501 | \$17,930 | 22% | \$99,431 | 0.0% | \$81,501 | \$17,930 | \$99,431 | 2014Q1 | 0.0% | \$81,501 | \$17,930 | \$99,431 |
| 15 | FLOODWAY CONTROL & DIVERSION STRU | \$24,370 | \$5,361 | 22% | \$29,731 | 0.0% | \$24,370 | \$5,361 | \$29,731 | 2014Q1 | 0.0% | \$24,370 | \$5,361 | \$29,731 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$3,311 | \$728 | 22% | \$4,040 | 0.0% | \$3,311 | \$728 | \$4,040 | 2014Q1 | 0.0% | \$3,311 | \$728 | \$4,040 |
| | | | | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$116,211 | \$25,566 | 22% | \$141,777 | | \$116,211 | \$25,566 | \$141,777 | | | \$116,211 | \$25,566 | \$141,777 |
| 01 | LANDS AND DAMAGES | \$25,485 | \$6,407 | 25% | \$31,892 | 0.0% | \$25,485 | \$6,407 | \$31,892 | 2014Q1 | 0.0% | \$25,485 | \$6,407 | \$31,892 |
| 02 | RELOCATIONS | \$8,550 | \$1,881 | 22% | \$10,431 | 0.0% | \$8,550 | \$1,881 | \$10,431 | 2014Q1 | 0.0% | \$8,550 | \$1,881 | \$10,431 |
| 30 | RELOCATIONS - PED | \$1,282 | \$282 | 22% | \$1,565 | 0.0% | \$1,282 | \$282 | \$1,565 | 2014Q1 | 0.0% | \$1,282 | \$282 | \$1,565 |
| 31 | RELOCATIONS - CM | \$855 | \$188 | 22% | \$1,043 | 0.0% | \$855 | \$188 | \$1,043 | 2014Q1 | 0.0% | \$855 | \$188 | \$1,043 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$1,162 | \$256 | 22% | \$1,418 | 0.0% | \$1,162 | \$256 | \$1,418 | 2014Q1 | 0.0% | \$1,162 | \$256 | \$1,418 |
| 1.0% | Planning & Environmental Compliance | \$1,162 | \$256 | 22% | \$1,418 | 0.0% | \$1,162 | \$256 | \$1,418 | 2014Q1 | 0.0% | \$1,162 | \$256 | \$1,418 |
| 6.0% | Engineering & Design | \$6,973 | \$1,534 | 22% | \$8,507 | 0.0% | \$6,973 | \$1,534 | \$8,507 | 2014Q1 | 0.0% | \$6,973 | \$1,534 | \$8,507 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$581 | \$128 | 22% | \$709 | 0.0% | \$581 | \$128 | \$709 | 2014Q1 | 0.0% | \$581 | \$128 | \$709 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$581 | \$128 | 22% | \$709 | 0.0% | \$581 | \$128 | \$709 | 2014Q1 | 0.0% | \$581 | \$128 | \$709 |
| 1.0% | Contracting & Reprographics | \$1,162 | \$256 | 22% | \$1,418 | 0.0% | \$1,162 | \$256 | \$1,418 | 2014Q1 | 0.0% | \$1,162 | \$256 | \$1,418 |
| 3.0% | Engineering During Construction | \$3,486 | \$767 | 22% | \$4,253 | 0.0% | \$3,486 | \$767 | \$4,253 | 2014Q1 | 0.0% | \$3,486 | \$767 | \$4,253 |
| 1.0% | Planning During Construction | \$1,162 | \$256 | 22% | \$1,418 | 0.0% | \$1,162 | \$256 | \$1,418 | 2014Q1 | 0.0% | \$1,162 | \$256 | \$1,418 |
| 1.0% | Project Operations | \$1,162 | \$256 | 22% | \$1,418 | 0.0% | \$1,162 | \$256 | \$1,418 | 2014Q1 | 0.0% | \$1,162 | \$256 | \$1,418 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$7,554 | \$1,662 | 22% | \$9,216 | 0.0% | \$7,554 | \$1,662 | \$9,216 | 2014Q1 | 0.0% | \$7,554 | \$1,662 | \$9,216 |
| 1.5% | Project Operation: | \$1,743 | \$383 | 22% | \$2,126 | 0.0% | \$1,743 | \$383 | \$2,126 | 2014Q1 | 0.0% | \$1,743 | \$383 | \$2,126 |
| 2.0% | Project Management | \$2,324 | \$511 | 22% | \$2,835 | 0.0% | \$2,324 | \$511 | \$2,835 | 2014Q1 | 0.0% | \$2,324 | \$511 | \$2,835 |
| CONTRACT COST TOTALS: | | \$181,435 | \$40,716 | | \$222,151 | | \$181,435 | \$40,716 | \$222,151 | | | \$181,435 | \$40,716 | \$222,151 |

****** TOTAL PROJECT COST SUMMARY ******

Printed:6/12/2014

Page 1 of 4

PROJECT: Lower San Joaquin River Feas Study - Alt LS-9B
PROJECT NO: 105785
LOCATION: Stockton CA

DISTRICT: SPD South Pacific Division
POC: CHIEF, COST ENGINEERING, Jeremiah Frost
PREPARED: 6/12/2014

This Estimate reflects the scope and schedule in report; Draft Feasibility Report (Alternatives)

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|-------------|----------------|--|---------------|---------------|----------------|---|---|---------------|---------------|---------------|
| | | | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Spent Thru: 1-Oct-14 (\$K) | | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| ALL | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 21% | \$0 | - | \$0 | \$0 | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$51,976 | \$11,819 | 23% | \$63,794 | 0.0% | \$51,976 | \$11,819 | \$63,794 | \$0 | | \$51,976 | \$11,819 | \$63,794 |
| 11 | LEVEES & FLOODWALLS | \$565,428 | \$118,774 | 21% | \$684,202 | 0.0% | \$565,428 | \$118,774 | \$684,202 | \$0 | | \$565,428 | \$118,774 | \$684,202 |
| 15 | FLOODWAY CONTROL & DIVERSION STRUCTURES | \$39,968 | \$9,312 | 23% | \$49,280 | 0.0% | \$39,968 | \$9,312 | \$49,280 | \$0 | | \$39,968 | \$9,312 | \$49,280 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$18,158 | \$3,908 | 22% | \$22,066 | 0.0% | \$18,158 | \$3,908 | \$22,066 | \$0 | | \$18,158 | \$3,908 | \$22,066 |
| CONSTRUCTION ESTIMATE TOTALS: | | \$675,530 | \$143,812 | | \$819,343 | 0.0% | \$675,530 | \$143,812 | \$819,343 | \$0 | | \$675,530 | \$143,812 | \$819,343 |
| 01 | LANDS AND DAMAGES | \$117,879 | \$32,277 | 27% | \$150,156 | 0.0% | \$117,879 | \$32,277 | \$150,156 | \$0 | | \$117,879 | \$32,277 | \$150,156 |
| 02 | RELOCATIONS | \$26,131 | \$5,454 | 21% | \$31,585 | 0.0% | \$26,131 | \$5,454 | \$31,585 | \$0 | | \$26,131 | \$5,454 | \$31,585 |
| 30 | RELOCATIONS - PED | \$3,920 | \$818 | 21% | \$4,738 | 0.0% | \$3,920 | \$818 | \$4,738 | \$0 | | \$3,920 | \$818 | \$4,738 |
| 31 | RELOCATIONS - CM | \$2,613 | \$545 | 21% | \$3,159 | 0.0% | \$2,613 | \$545 | \$3,159 | \$0 | | \$2,613 | \$545 | \$3,159 |
| | | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN | \$101,327 | \$21,571 | 21% | \$122,898 | 0.0% | \$101,327 | \$21,571 | \$122,898 | \$0 | | \$101,327 | \$21,571 | \$122,898 |
| 31 | CONSTRUCTION MANAGEMENT | \$67,551 | \$14,381 | 21% | \$81,932 | 0.0% | \$67,551 | \$14,381 | \$81,932 | \$0 | | \$67,551 | \$14,381 | \$81,932 |
| PROJECT COST TOTALS: | | \$994,951 | \$218,859 | 22% | \$1,213,810 | | \$994,951 | \$218,859 | \$1,213,810 | \$0 | | \$994,951 | \$218,859 | \$1,213,810 |

CHIEF, COST ENGINEERING, Jeremiah Frost

PROJECT MANAGER, Joana Savinon

CHIEF, REAL ESTATE, Sharon Caine

CHIEF, ENGINEERING, Rick Poeppelman

ESTIMATED TOTAL PROJECT COST: \$1,213,810,000

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 2 of 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-9B

LOCATION: Stockton CA

This Estimate reflects the scope and schedule in report;

Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division

POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--|-----------|-------------------|-----------|---|-----------|------------------|-----------|---|------|-----------|-----------|-----------|
| | | Estimate Prepared: Effective Price Level: | | 6/9/2014 41913 | | Program Year (Budget EC): Effective Price Level Date: | | 2015 1 OCT 14 | | | | | | |
| | | RISK BASED | | | | | | | | | | | | |
| WBS | Civil Works | COST | CNTG | CNTG | TOTAL | ESC | COST | CNTG | TOTAL | Mid-Point | ESC | COST | CNTG | FULL |
| NUMBER | Feature & Sub-Feature Description | (\$K) | (\$K) | (%) | (\$K) | (%) | (\$K) | (\$K) | (\$K) | Date | (%) | (\$K) | (\$K) | (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | N Stockton, Fix B | | | | | | | | | | | | | |
| | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 25% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$33,941 | \$8,513 | 25% | \$42,454 | 0.0% | \$33,941 | \$8,513 | \$42,454 | 2014Q1 | 0.0% | \$33,941 | \$8,513 | \$42,454 |
| 11 | LEVEES & FLOODWALLS | \$259,009 | \$64,959 | 25% | \$323,969 | 0.0% | \$259,009 | \$64,959 | \$323,969 | 2014Q1 | 0.0% | \$259,009 | \$64,959 | \$323,969 |
| 15 | FLOODWAY CONTROL & DIVERSION STRUCTURES | \$15,598 | \$3,912 | 25% | \$19,510 | 0.0% | \$15,598 | \$3,912 | \$19,510 | 2014Q1 | 0.0% | \$15,598 | \$3,912 | \$19,510 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$8,873 | \$2,225 | 25% | \$11,098 | 0.0% | \$8,873 | \$2,225 | \$11,098 | 2014Q1 | 0.0% | \$8,873 | \$2,225 | \$11,098 |
| | | | | | \$0 | | | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$317,421 | \$79,609 | 25% | \$397,030 | | \$317,421 | \$79,609 | \$397,030 | | | \$317,421 | \$79,609 | \$397,030 |
| 01 | LANDS AND DAMAGES | \$78,925 | \$22,659 | 29% | \$101,585 | 0.0% | \$78,925 | \$22,659 | \$101,585 | 2014Q1 | 0.0% | \$78,925 | \$22,659 | \$101,585 |
| 02 | RELOCATIONS | \$8,378 | \$2,101 | 25% | \$10,479 | 0.0% | \$8,378 | \$2,101 | \$10,479 | 2014Q1 | 0.0% | \$8,378 | \$2,101 | \$10,479 |
| 30 | RELOCATIONS - PED | \$1,257 | \$315 | 25% | \$1,572 | 0.0% | \$1,257 | \$315 | \$1,572 | 2014Q1 | 0.0% | \$1,257 | \$315 | \$1,572 |
| 31 | RELOCATIONS - CM | \$838 | \$210 | 25% | \$1,048 | 0.0% | \$838 | \$210 | \$1,048 | 2014Q1 | 0.0% | \$838 | \$210 | \$1,048 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 1.0% | Planning & Environmental Compliance | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 6.0% | Engineering & Design | \$19,045 | \$4,776 | 25% | \$23,821 | 0.0% | \$19,045 | \$4,776 | \$23,821 | 2014Q1 | 0.0% | \$19,045 | \$4,776 | \$23,821 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$1,587 | \$398 | 25% | \$1,985 | 0.0% | \$1,587 | \$398 | \$1,985 | 2014Q1 | 0.0% | \$1,587 | \$398 | \$1,985 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$1,587 | \$398 | 25% | \$1,985 | 0.0% | \$1,587 | \$398 | \$1,985 | 2014Q1 | 0.0% | \$1,587 | \$398 | \$1,985 |
| 1.0% | Contracting & Reprographics | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 3.0% | Engineering During Construction | \$9,523 | \$2,388 | 25% | \$11,911 | 0.0% | \$9,523 | \$2,388 | \$11,911 | 2014Q1 | 0.0% | \$9,523 | \$2,388 | \$11,911 |
| 1.0% | Planning During Construction | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 1.0% | Project Operations | \$3,174 | \$796 | 25% | \$3,970 | 0.0% | \$3,174 | \$796 | \$3,970 | 2014Q1 | 0.0% | \$3,174 | \$796 | \$3,970 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$20,632 | \$5,175 | 25% | \$25,807 | 0.0% | \$20,632 | \$5,175 | \$25,807 | 2014Q1 | 0.0% | \$20,632 | \$5,175 | \$25,807 |
| 1.5% | Project Operation: | \$4,761 | \$1,194 | 25% | \$5,955 | 0.0% | \$4,761 | \$1,194 | \$5,955 | 2014Q1 | 0.0% | \$4,761 | \$1,194 | \$5,955 |
| 2.0% | Project Management | \$6,348 | \$1,592 | 25% | \$7,940 | 0.0% | \$6,348 | \$1,592 | \$7,940 | 2014Q1 | 0.0% | \$6,348 | \$1,592 | \$7,940 |
| CONTRACT COST TOTALS: | | \$486,172 | \$124,797 | | \$610,969 | | \$486,172 | \$124,797 | \$610,969 | | | \$486,172 | \$124,797 | \$610,969 |

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 3 of 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-9B

LOCATION: Stockton CA

This Estimate reflects the scope and schedule in report;

Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division

POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--------------------------------------|--|--------------------------------|---------------|------------------------------|----------------|---|---------------|--------------------------------------|----------------|---|------------|---------------|---------------|---------------|
| | | Estimate Prepared: 6/9/2014 | | Effective Price Level: 41913 | | Program Year (Budget EC): 2015 | | Effective Price Level Date: 1 OCT 14 | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Mid-Point Date | ESC (%) | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| ALL | C Stockton, Fixes B & C + M Ch | | | | | | | | | | | | | |
| 06 | COMPOSITE INDEX (WEIGHTED AVERAGE | \$0 | \$0 | 22% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 11 | FISH & WILDLIFE FACILITIES | \$6,736 | \$1,493 | 22% | \$8,229 | 0.0% | \$6,736 | \$1,493 | \$8,229 | 2014Q1 | 0.0% | \$6,736 | \$1,493 | \$8,229 |
| 15 | LEVEES & FLOODWALLS | \$75,842 | \$16,807 | 22% | \$92,649 | 0.0% | \$75,842 | \$16,807 | \$92,649 | 2014Q1 | 0.0% | \$75,842 | \$16,807 | \$92,649 |
| 18 | FLOODWAY CONTROL & DIVERSION STRU | \$24,370 | \$5,400 | 22% | \$29,770 | 0.0% | \$24,370 | \$5,400 | \$29,770 | 2014Q1 | 0.0% | \$24,370 | \$5,400 | \$29,770 |
| | CULTURAL RESOURCE PRESERVATION | \$3,146 | \$697 | 22% | \$3,843 | 0.0% | \$3,146 | \$697 | \$3,843 | 2014Q1 | 0.0% | \$3,146 | \$697 | \$3,843 |
| | | | | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$110,095 | \$24,397 | 22% | \$134,492 | | \$110,095 | \$24,397 | \$134,492 | | | \$110,095 | \$24,397 | \$134,492 |
| 01 | LANDS AND DAMAGES | \$24,469 | \$6,154 | 25% | \$30,623 | 0.0% | \$24,469 | \$6,154 | \$30,623 | 2014Q1 | 0.0% | \$24,469 | \$6,154 | \$30,623 |
| 02 | RELOCATIONS | \$8,240 | \$1,826 | 22% | \$10,066 | 0.0% | \$8,240 | \$1,826 | \$10,066 | 2014Q1 | 0.0% | \$8,240 | \$1,826 | \$10,066 |
| 30 | RELOCATIONS - PED | \$1,236 | \$274 | 22% | \$1,510 | 0.0% | \$1,236 | \$274 | \$1,510 | 2014Q1 | 0.0% | \$1,236 | \$274 | \$1,510 |
| 31 | RELOCATIONS - CM | \$824 | \$183 | 22% | \$1,007 | 0.0% | \$824 | \$183 | \$1,007 | 2014Q1 | 0.0% | \$824 | \$183 | \$1,007 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| 1.0% | Project Management | \$1,101 | \$244 | 22% | \$1,345 | 0.0% | \$1,101 | \$244 | \$1,345 | 2014Q1 | 0.0% | \$1,101 | \$244 | \$1,345 |
| 1.0% | Planning & Environmental Compliance | \$1,101 | \$244 | 22% | \$1,345 | 0.0% | \$1,101 | \$244 | \$1,345 | 2014Q1 | 0.0% | \$1,101 | \$244 | \$1,345 |
| 6.0% | Engineering & Design | \$6,606 | \$1,464 | 22% | \$8,070 | 0.0% | \$6,606 | \$1,464 | \$8,070 | 2014Q1 | 0.0% | \$6,606 | \$1,464 | \$8,070 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$550 | \$122 | 22% | \$672 | 0.0% | \$550 | \$122 | \$672 | 2014Q1 | 0.0% | \$550 | \$122 | \$672 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$550 | \$122 | 22% | \$672 | 0.0% | \$550 | \$122 | \$672 | 2014Q1 | 0.0% | \$550 | \$122 | \$672 |
| 1.0% | Contracting & Reprographics | \$1,101 | \$244 | 22% | \$1,345 | 0.0% | \$1,101 | \$244 | \$1,345 | 2014Q1 | 0.0% | \$1,101 | \$244 | \$1,345 |
| 3.0% | Engineering During Construction | \$3,303 | \$732 | 22% | \$4,035 | 0.0% | \$3,303 | \$732 | \$4,035 | 2014Q1 | 0.0% | \$3,303 | \$732 | \$4,035 |
| 1.0% | Planning During Construction | \$1,101 | \$244 | 22% | \$1,345 | 0.0% | \$1,101 | \$244 | \$1,345 | 2014Q1 | 0.0% | \$1,101 | \$244 | \$1,345 |
| 1.0% | Project Operations | \$1,101 | \$244 | 22% | \$1,345 | 0.0% | \$1,101 | \$244 | \$1,345 | 2014Q1 | 0.0% | \$1,101 | \$244 | \$1,345 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$7,156 | \$1,586 | 22% | \$8,742 | 0.0% | \$7,156 | \$1,586 | \$8,742 | 2014Q1 | 0.0% | \$7,156 | \$1,586 | \$8,742 |
| 1.5% | Project Operation: | \$1,651 | \$366 | 22% | \$2,017 | 0.0% | \$1,651 | \$366 | \$2,017 | 2014Q1 | 0.0% | \$1,651 | \$366 | \$2,017 |
| 2.0% | Project Management | \$2,202 | \$488 | 22% | \$2,690 | 0.0% | \$2,202 | \$488 | \$2,690 | 2014Q1 | 0.0% | \$2,202 | \$488 | \$2,690 |
| CONTRACT COST TOTALS: | | \$172,386 | \$38,932 | | \$211,319 | | \$172,386 | \$38,932 | \$211,319 | | | \$172,386 | \$38,932 | \$211,319 |

**** TOTAL PROJECT COST SUMMARY ****

Printed:6/12/2014

Page 4 of 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lower San Joaquin River Feas Study - Alt LS-9B

LOCATION: Stockton CA

This Estimate reflects the scope and schedule in report;

Draft Feasibility Report (Alternatives)

DISTRICT: SPD South Pacific Division

POC: CHIEF, COST ENGINEERING, Jeremiah Frost

PREPARED: 6/12/2014

| Civil Works Work Breakdown Structure | | ESTIMATED COST (in \$1000s) | | | | PROJECT FIRST COST (Constant Dollar Basis) (in \$1000s) | | | | TOTAL PROJECT COST (FULLY FUNDED) (in \$1000s) | | | | |
|--|--|---|-----------------|-------------|------------------|--|------------------|-----------------|------------------|---|------------|------------------|-----------------|------------------|
| | | Estimate Prepared: 6/9/2014 Effective Price Level: 41913 | | | | Program Year (Budget EC): 2015 Effective Price Level Date: 1 OCT 14 | | | | | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST (\$K) | CNTG (\$K) | CNTG (%) | TOTAL (\$K) | ESC (%) | COST (\$K) | CNTG (\$K) | TOTAL (\$K) | Mid-Point Date | ESC (%) | COST (\$K) | CNTG (\$K) | FULL (\$K) |
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| RD 17 Fix E | | | | | | | | | | | | | | |
| ALL | COMPOSITE INDEX (WEIGHTED AVERAGE) | \$0 | \$0 | 16% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 06 | FISH & WILDLIFE FACILITIES | \$11,298 | \$1,813 | 16% | \$13,112 | 0.0% | \$11,298 | \$1,813 | \$13,112 | 2014Q1 | 0.0% | \$11,298 | \$1,813 | \$13,112 |
| 11 | LEVEES & FLOODWALLS | \$230,577 | \$37,008 | 16% | \$267,584 | 0.0% | \$230,577 | \$37,008 | \$267,584 | 2014Q1 | 0.0% | \$230,577 | \$37,008 | \$267,584 |
| 15 | FLOODWAY CONTROL & DIVERSION STRU | \$0 | \$0 | 16% | \$0 | 0.0% | \$0 | \$0 | \$0 | 0 | 0.0% | \$0 | \$0 | \$0 |
| 18 | CULTURAL RESOURCE PRESERVATION | \$6,139 | \$985 | 16% | \$7,125 | 0.0% | \$6,139 | \$985 | \$7,125 | 2014Q1 | 0.0% | \$6,139 | \$985 | \$7,125 |
| | | | | | | | \$0 | | | | | | | |
| CONSTRUCTION ESTIMATE TOTALS: | | \$248,014 | \$39,806 | 16% | \$287,821 | | \$248,014 | \$39,806 | \$287,821 | | | \$248,014 | \$39,806 | \$287,821 |
| 01 | LANDS AND DAMAGES | \$14,485 | \$3,463 | 24% | \$17,948 | 0.0% | \$14,485 | \$3,463 | \$17,948 | 2014Q1 | 0.0% | \$14,485 | \$3,463 | \$17,948 |
| 02 | RELOCATIONS | \$9,514 | \$1,527 | 16% | \$11,041 | 0.0% | \$9,514 | \$1,527 | \$11,041 | 2014Q1 | 0.0% | \$9,514 | \$1,527 | \$11,041 |
| 30 | RELOCATIONS - PED | \$1,427 | \$229 | 16% | \$1,656 | 0.0% | \$1,427 | \$229 | \$1,656 | 2014Q1 | 0.0% | \$1,427 | \$229 | \$1,656 |
| 31 | RELOCATIONS - CM | \$951 | \$153 | 16% | \$1,104 | 0.0% | \$951 | \$153 | \$1,104 | 2014Q1 | 0.0% | \$951 | \$153 | \$1,104 |
| 30 PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | | |
| 1.0% | Project Management | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 1.0% | Planning & Environmental Compliance | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 6.0% | Engineering & Design | \$14,881 | \$2,388 | 16% | \$17,269 | 0.0% | \$14,881 | \$2,388 | \$17,269 | 2014Q1 | 0.0% | \$14,881 | \$2,388 | \$17,269 |
| 0.5% | Reviews, ATRs, IEPRs, VE | \$1,240 | \$199 | 16% | \$1,439 | 0.0% | \$1,240 | \$199 | \$1,439 | 2014Q1 | 0.0% | \$1,240 | \$199 | \$1,439 |
| 0.5% | Life Cycle Updates (cost, schedule, risks) | \$1,240 | \$199 | 16% | \$1,439 | 0.0% | \$1,240 | \$199 | \$1,439 | 2014Q1 | 0.0% | \$1,240 | \$199 | \$1,439 |
| 1.0% | Contracting & Reprographics | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 3.0% | Engineering During Construction | \$7,440 | \$1,194 | 16% | \$8,634 | 0.0% | \$7,440 | \$1,194 | \$8,634 | 2014Q1 | 0.0% | \$7,440 | \$1,194 | \$8,634 |
| 1.0% | Planning During Construction | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 1.0% | Project Operations | \$2,480 | \$398 | 16% | \$2,878 | 0.0% | \$2,480 | \$398 | \$2,878 | 2014Q1 | 0.0% | \$2,480 | \$398 | \$2,878 |
| 31 CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | | |
| 6.5% | Construction Management | \$16,121 | \$2,587 | 16% | \$18,708 | 0.0% | \$16,121 | \$2,587 | \$18,708 | 2014Q1 | 0.0% | \$16,121 | \$2,587 | \$18,708 |
| 1.5% | Project Operation: | \$3,720 | \$597 | 16% | \$4,317 | 0.0% | \$3,720 | \$597 | \$4,317 | 2014Q1 | 0.0% | \$3,720 | \$597 | \$4,317 |
| 2.0% | Project Management | \$4,960 | \$796 | 16% | \$5,756 | 0.0% | \$4,960 | \$796 | \$5,756 | 2014Q1 | 0.0% | \$4,960 | \$796 | \$5,756 |
| CONTRACT COST TOTALS: | | \$336,393 | \$55,130 | | \$391,523 | | \$336,393 | \$55,130 | \$391,523 | | | \$336,393 | \$55,130 | \$391,523 |